WITHIN THE MIND MAZE

BY

EDGAR L. LARKIN

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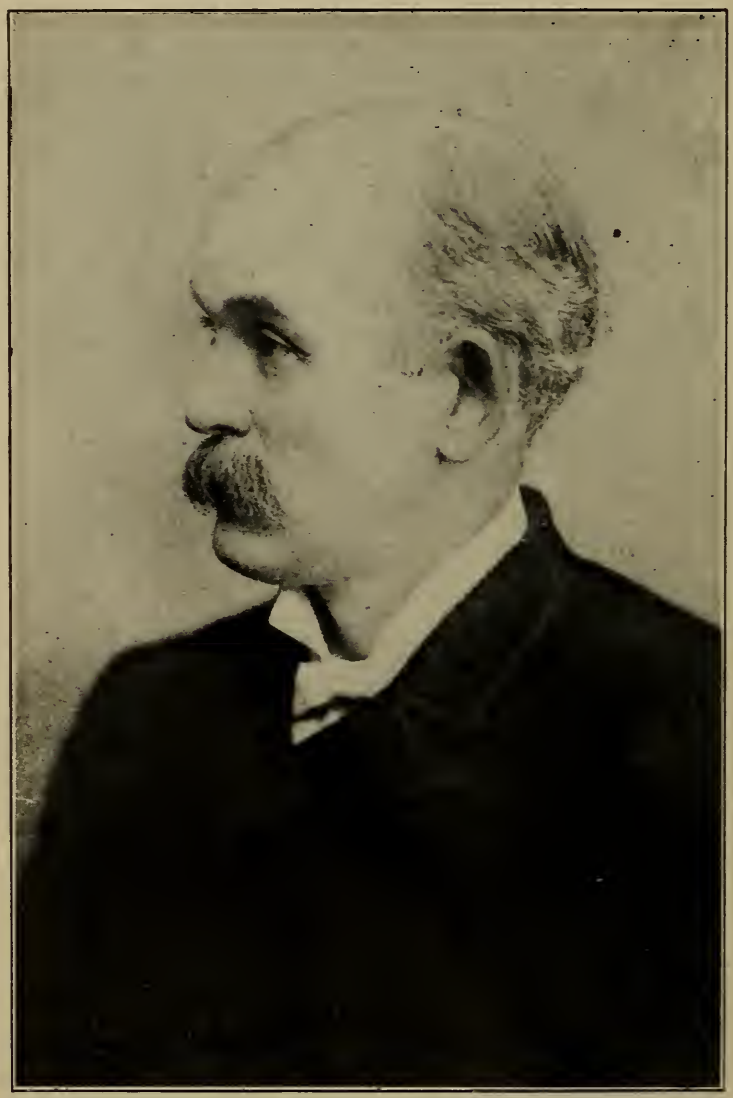

EDGAR LUCIEN LARKIN

Director Lowe Observatory, taking charge August 11, 1900

WITHIN THE MIND MAZE

OR

MENTONOMY. THE LAW OF THE MIND

BY EDGAR LUCIEN LARKIN

DIRECTOR OF THE LOWE OBSERVATORY
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Member of the Illinois Natural History Society, Ottawa, 1879; director New Windsor, Illinois, Observatory, 1880-1895; member of the American Association for the Advancement of Science, Saratoga, N. Y., 1883; Life Fellow, Washington, D. C., 1904; member of the Electrical Congress, Chicago, Illinois, 1893; of the International Congress of Arts and Science, World's Electrical Congress; Astronomical and Astrophysical Society of America, St. Louis, Mo., 1904; Astronomical Society of the Pacific, San Francisco, Cal., 1901; World's Theosophical Society, Adyr, India, 1907; National Geographical Society, Washington, D. C., 1907, and of the British Association for the Advancement of Science, Winnipeg, Manitoba, 1909. Also special writer on scientific subjects in magazines and papers

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STATEMENT

This book is commended to all good and progressive men and women who believe that by studying Mind, discovering its laws and applying them to human betterment, the career of man on earth could be greatly improved. And that the appalling errors, war, alcohol, oppression, injustice crime and poverty can be abolished, together with a large proportion of disease, pain and unhappiness.

On October 5th, 1858, I began the study of astronomy; this was in my eleventh year. I found that a transit of Venus across the disk of the sun was predicted to occur on December 6, 1882. Often during the ensuing 24 years, I wondered if it would really take place at the predicted time. The eventful day arrived. I went to the local telegraph office in Illinois to secure the exact time. The U. S. Naval Observatory in Washington, D. C., was sending out sidereal time the electric circuit was completed and I listened to the ticking of the master clock distant 1,000 miles; and then came the signal—Noon. I moved the seconds hand of my watch to instant of exact local time and hurried to the observatory, opened the dome, turned the telescope on the sun and began looking; when behold the planet in its advance cut out a portion of solar light and formed a small black notch on the edge of the disk. The actual time of first contact was within one minute of that predicted many years before. And the next transit will occur on June 8, 2004. This December 6, 1882, was an eventful day in my career; it made a deep and lasting impression of the Majesty of Mind. Since then I have observed hundreds of predicted astronomical events, and the supremacy of Mind in these was ever on display for the apparitions never failed of coming on time within small limits of error.

And during all these years of exploration in star-strewn depths; into labyrinths of suns, and mazes of nebulas and deeper within black chasms in the stellar floor, into blank, starless and dark areas, in the sidereal vault, the impression of the immanence of Mind has never ceased. And with this impression intensified by recent World's Congresses of Science in Chicago, St. Louis and Winnipeg, where the great modern deductions of science were so ably recounted by their originators; and where the oscillations of electricity, together with radiant energy in general were explained; the subject of this book was taken up.

Several paragraphs in this volume have appeared in different magazines, a fact which accounts for discontinuity. The main reason of this publication, however, is the apparent dearth of mention of Mind in late works on biology. The highest entity should have an exalted place in all literature.

A striking proof that Mentonomy is the highest of the standard sciences is given by the enormous mental power of Winifred Sackville Stoner, the little girl aged eight years. Her mother applied the laws of Mind in her training; and the result is that her daughter has encompassed so much of human wisdom that the glowing of her intellect is proof of the contention of this book, that Mind manifesting in the human brain is illimitable.

EDGAR LUCIEN LARKIN.

Lowe Observatory, September 1st, 1911

WITHIN THE MIND MAZE

MENTONOMY, THE LAW OF THE MIND

These articles are being written under an impression so strong that it rises to the dignity of a belief, that Mind, expressing as human, or, in the human phase, is able by studying the material universe, to discover some facts relating to its Creator. The main object in publishing these articles is to convince the reader that the universe stands upon a mental base, rooted and grounded in Mind; and that Mind created what we have named electrons. No hope is entertained by the author that the true nature of either Mind or matter will be discovered in this study, but hope is expressed that a few clews will be found.

No definition of the words Mind, will, thought, create, creating, creation, Creator, infinity, eternity, duration, time, space, existence, being, mentation, personality, or life will be offered. The reader is at liberty to search all dictionaries and lexicons for meanings of these mysterious words, and adopt those he most admires. These articles are merely a search for clews, hints or suggestions, as to their import. The method employed will be this: critical research in the properties of Mind and matter within range of human sensation, will be made, and all clews compared. Then the assumption will be made that the Creator must be endowed with any given attribute to create any discovered property of matter. This statement, "create any property of matter," is obscure, and may not be the best one to use, but this subject will be studied later.

I would consider it to be a great favor if the reader will hold all his theories and beliefs in abeyance until he has read the entire series of articles; that is, not to decide finally upon the dictionary definitions of any of the words in the above list

—merely hold tentative or preliminary definitions, and approach this study with an open Mind. If doctrines here presented conflict with his own, I would be pleased to have him suspend final judgment until all the words in the articles have been weighed, and compared with all the others.

THE CREATOR

The subjects Creator and creation are as old as thought itself, and their antiquity dates back to the time in the distant past when men really began to think. For many centuries, the great, the good and the true minds of each have thought, studied and written upon these inexhaustible themes. I scarcely hope to add anything, but do hope to rearrange long-existing ideas along lines marked out by late discoveries in mentological and physical science, in mentation and radiation, in thought forms and their activities, in thought origins and their subsequent transmission, in thought projection and reception. Throughout the articles Mind, mentation and directivity will ever be given prominent and high places. But to matter will be assigned an exalted position also. An endeavor will be made to explore the labyrinths of both Mind and matter, in elaborate search after the Creator.

Where exists intelligence must be the abiding place of the Creator. Intelligence is on display within all that part of the Universe within the scrutiny of man with added powers of telespectroscope, telecamera, sensitive plates, the new ultraviolet light microscope, balance, crucible and retorts. Intelligence acts everywhere in this vast realm. If intelligence, the Master Mind, has one center of radiation, this central Mind is the Creator. If infinite, omnipresent Mind exists, it is the Creator. But infinity has no center. To find the Creator is to locate Mind. Mind is the only entity alive; where does it exist? All questions presented to man for solution subside into insignificance before this one supreme problem. The expression "finite Mind" may be in error, for finite is always a part of the infinite. Mind, at least the units now functioning as human mental personalities, may be unable to think of all the other units—of infinite Mind.

ONE SWING OF THE PENDULUM

The law of the pendulum is that it is isochronal, making equal oscillations in equal times. The time of falling from the highest point to the lowest is precisely equal to that of rising from lowest to highest. Were this not true, we should have no clocks depending on one of Nature's constants at any one point, earth-gravitation.

From the ages of twelve to twenty-five years I heard but little besides "evolution," "materialism," "self-existent universe;" "eternity of matter;" "properties of matter only;" "always existed," "always will exist;" "no necessity of a Creator;" "the stellar universe evolved itself;" "animals from protista and monera to man evolved themselves;" and to crown all, Mind itself is a mere "property of matter." That is, matter was in existence before Mind; or else Mind and matter; or matter and Mind came into being simultaneously; or if not exactly, matter is of slightly greater antiquity than Mind.

From this it appeared to me in youthful days that matter is millions of years older than Mind, for cosmic turbulence, tossings, seethings, boilings and unrest of matter in the formation of nebulas, meteors, comets, worlds, moons and suns, obtained for countless cycles, eons and ages before even one planet like the earth was hushed down into comparative stillness, quietude and very delicate neutralization or balance of opposing forces, geological, thermal, electrical and meterological, in order that so excessively delicate an object as an amœba, a microscopic bag of glue, a sack of gelatine filled with gelatinous water, might come into existence all of itself. For with one amœba on earth, disporting in ancient or primeval thermal seas, the far later appearance of mammals, anthropoids and finally man was inevitable through slow processes of evolution. All was evolution up my way; books by dozens, teaching the doctrine, were read during the first half of my career. Not in a vale of tears, but on a flat joy prairie in Illinois. Waving expanses of grass and fields of wheat, with square miles of corn made up my horizon east, south and west, in summer, and blowing snow in winter. One object broke the monotony of the horizon in the southeast—a diminutive schoolhouse made of logs. But the north was a wide area of majestic trees, beneath which for miles there thrived a deep tangled wildwood; and lower still a

wilderness of flowers. Within this lovely solitude, down by the creek, I pored over works on evolution. The lowing kine were there galore, while bucolic sights and sounds and evolutions were mine.

Evolution was my theme and divers attacks were made by me upon peripatetic colporteurs, tract-distributors and even preachers—ministers. So it was evolution by day and by night. Every phase of astronomy during all these years was given an evolutionary cast. The Universe either evolved itself, the Galaxy and a million suns; or, if a Creator existed, matter was created, and creation ended in presence of evolution. Given the quantity of matter sufficient to be formed into the entire Universe as it now stands, then the Creator could retire and leave all else to evolution. They went so far, and I believe I did at the critical time, as to say that the Creator could withdraw entirely, and not deputize any lower order of intelligence to form matter into suns and worlds. For matter was able to do all this work of itself. In looking over my publications in papers and magazines during these early years, to me, an astonishing discovery was made: I did not publish this doctrine. The question is, why I did not print as I spoke? I am now glad that I did not publish this hypothesis of Nature.

As years passed along into the past portion of duration—the swing of the pendulum of human thought, speculation and sicentific discovery rose higher and higher, and is still rising. Conceive two pendulums in oscillation; one the pendulum of accurate science, the other of speculation; or form of theorizing in which Creative Mind either never existed, or having once wrought in the creation of matter, has long since withdrawn, leaving matter to evolve itself. Then the latter has surely reached its highest point and is now descending. This fact is clear to all close students. The law of material pendulums is violated, the descent is now more rapid than was the ascent. Mind in Nature, if not already victorious, is on the verge of complete victory and vindication.

I do not now hesitate to write this: **There is not a great scientist now living not aware of the existence of Mind in the Sidereal Universe—a Dominating Mind.**

No hint, suggestion, nor trace of clew as to what Mind is, has yet been impressed on the phase of Mind now functioning in the human brain. Yet the brain contains within its

majestic throne-room a Mind that is very well aware that there exists a Master Mind far more powerful. The human rate of functioning not only is aware of a higher rate, but knows it—a stronger word than aware. All this has been known during, say, ten years, by advancing mentalists. None are advanced, far advanced yet; but some living know that higher Mind exists. Some of these cautiously advocate the doctrine that the phase of Mind expressing in human brain cells is destined or is able, or has inherent powers of expansion within to attain illimitable expansion, infinite widening. This thought was originated by non-mathematicians, making a puny effort to get a glimpse into the profound deeps of the, to them, Master Mind of a mathematician. The attempt being hopeless, they called the Mind of the mathematician limitless. The truth. so far as they were concerned.

ISOLATION OF ELECTRONS

The cardinal discovery of electrons in high vacuum glass tubes containing fused in terminals of hard and obdurate metals, but easily torn and separated into electrons by electricity, themselves electricity after the tearing asunder into free uncombined and nascent states, has hastened the motion of the descending pendulum. Indeed, it seems to have already passed the lowest place in the arc of vibration, and is now rising into sublime regions of Mind. For certainly, surely and indubitably, electrons are directed by Mind. This is the new set, fixed and rock-based law of modern science. And it is as hopeless to storm against this assertion as it is to offer battle mentally to a mathematician. Either one or the other of these two statements must inevitably be true:—electrons know what to do from within; or are directed by Mind from without. Only Mind knows—possesses knowledge. This is rigid and set in the nature of language—in the very nature of thought. Here is another fact, the isolated mentoids, particles, parts, portions, forms, or Mind factors directing electrons into matter, do not create matter, they form it. Electrons only were created. Now the Mind must think of create, and cannot possibly avoid it. To say that mentoids create is an error—they are thought messengers, workers, organizers, makers, formers and matter builders sent by the Master Mind, the Mind Supreme, which alone creates. To say that matter is

eternal not only does not solve any phase of the riddle of the Universe; but adds obscure phases. On last analysis, it is a law in mentonomy that it is natural for us to think of the word create and of creative processes, although we cannot at present hope to understand.

THOUGHT FORMS

And it is also natural for us to think that no object can be formed without a previously formed thought pattern. This would be as impossible as for an iron casting without a mold, and a mold without a pattern. The word matter as used in chemistry and physics cannot be applied to the vast quantity of original created electrons. Mass, a term applied to matter, cannot exist until electrons revolve around each other at definite and fixed high specific speeds, specific velocities being a fundamental fact in Nature. The basic fact—the existence of mentoids, thought-bodies or forms has just received striking proof by a dry plate photograph made by Dr. M. Yamaguchi, a Japanese physician, a Yale graduate. A woman having the mental faculty of auto-hypnosis, was requested by the doctor to hypnotize herself and strongly suggest to herself a word spelled in Japanese letters. She did and remained hypnotized during one hour. Sensitive dry plates held near her head, upon development, revealed the negative of the word spelled in Japanese. For long, all works on physics have taught that light is a physical sensation due to the impact of excessively minute and rapid waves in ether, upon the retina of the eye, thence conveyed by the optic nerve to the optical thalamus in the brain. And that the oscillations of these waves, transversely to the line of the ray act upon silver salts on plates to make impression of an image. It has always been obscure as to how do series of waves vibrate the atoms of silver by their motion, thus changing their arrangement to trace an image; or is light a chemical substance? And varying chemically with varying colors? If the chemical theory is true, then positively "thoughts are things." Here great caution must be had. Electrons are not things, for the words thing, object, body, apply to matter; but matter cannot appear unless electrons revolve around each other. The electrons moving in straight lines alone, one after another, without orbital revolution around one another are not matter, not

forms, not bodies, not thoughts. Then thoughts are material, chemical, and can impress brain cells and brain cell filaments, and silver atoms chemically not mechanically.

Directivity is the base of all activity; no thought body, or form, can move an inch without directivity exerted by a director. And the director is a marvelous Master Mind. For the highest of Master Minds expressing as human is required to even commence to think of the simplest process in Nature around and about. That is, to even think of these activities; for to understand even one activity is so far in human mental evolution, utterly impossible.

A majestic Master Mind creates electrons and directs them how to actuate to form all existing things.

The statement here that thoughts are material and can act chemically is one fraught with vast possibilities. The theory is that matter cannot be until electrons revolve around each other. But the astonishing thought appears to be a fact, that electrons may revolve around the exceedingly delicate filaments in brain tissue extending from their centers of radiation. These fibers grow smaller and smaller, until no microscope can follow them to their ends.

AN APOSTROPHE TO MIND

Written Upon a Summit in the Sierra Madre Mountains in Southern California—Primordial Mind, Eternal Mind, Creative Mind, Directive Mind, Master Mind—Mind.

The adjectives scarcely lend power to these expressions. Without them, the word Mind stands in supreme majesty like a monument of pure white marble above the clouds. As I write here upon this mountain peak, a vast expanse of snow-white cloud extends from the mountains out over all Southern California, and above the distant sea—the Pacific Ocean. Suppose that a shaft of marble, whiter than the clouds, extended far above them even to the altitude of this summit. The base would be invisible; yet we know, are conscious that the heavy mass "hath foundation." The colossal base rests on solid earth; we are naturally aware of this fact, although we cannot see either earth or the huge stones supporting the pillar. Distant peaks, huge piles of stone, rising above white clouds, present a peculiar aspect: they seem to be without foundations; or at least appear to stand on vapor. Should a gigantic pillar of marble suddenly appear above the pure white expanse the mental impression would be remarkable: a shaft of great weight cut off and apparently at rest upon thin clouds, fairy-like wisps of watery mist. Compare the shaft rising in majestic and imposing grandeur, impressive, beyond our powers of thought, to Mind primeval, Mind eternal, Mind sublime—to Mind. Let the area of cloud wastes be of infinite magnitude; be infinitely wide, then but two objects would be visible to a distant eye, the absolutely pure white pillar and the white expanse below. Let the eye viewing this marvelous scene be a human eye, conveying impressions and images to a normal human mind functioning in a human brain. And let the brain be that of a trained mathematician, but endowed with higher mathematical powers than those now possessed by any living mathematician, or by any or all who have lived and labored in the past. Then both pillar and clouds, and all else in existence in the capacity or form of matter could vanish; but with this inexplicable result: the mathematician would still retain in the mind the vision, image, form or impression of pillar and cloud area. The fact is called memory and cannot be explained in the present state of knowledge of personality. This simile is selected because the expanse of clouds is so beautiful and impressive now. Imagine that all scenes of matter are annihilated and

that mind takes the place of the pillar and infinite space that of the clouds. Then the question arises, what are the relations between mind and space? Or can the words of any language now spoken by man be employed in attempted explanation, in any form of theory, hypothesis or metaphysical speculation; or must this problem be considered to be insoluble? Is it utterly useless for mind or elements of mind now manifesting in the human phase, to try to study original mind? Often have I given up the very attempt as hopeless, and ceased thinking on the intricate subject; stopped the study of mentonomy and taken up a book on calculus, or astronomy, electricity, physics, chemistry or biology. Inextricable labyrinths in these mighty sciences have often been traversed; differentials and integrals explored; the recesses of chemistry peered into; and chambers in the palace of electricity opened—doors just ajar: and life questioned saying: "Whence comest thou? All corridors, winding ways, labyrinthine passages, stairways, tunnels, rooms leading through slightly open doors to others and these to others and still others, lead into the inner chambers of a maze profound. Within this hidden room there is one person, one personality, and that is Mind. The room is the sidereal universe and all it contains. For every science, every line, lane, pathway and road leads directly to a Universal Mind. That is, we approach mind, but the impression comes, it is not central. Infinitude has no center. Then mind cannot be located in space. Space itself is the throne-room, the home, the maze in which mind resides. Then mind is cosmical. We then become integers. Do we? May we not be decimal fractions of mind primordial? Already our lines have encompassed personality: we cannot escape ourselves; we become involved at once we study human cosmic things. And local? No, the fractions are concrete, integral personalities. We are centers—if we know how to use our minds, centers of mental radiation, of mind energy. Personal equation centers here: some astronomers can think of the star Canopus and then of the Polar star within the one-hundredth part of one second; others within one-eightieth, one-fortieth, one-twenty-fifth, to one-tenth. The distance in between these two two huge suns is not less than four quadrillion miles. But these same men require the same lengths of time to think of one object, and then of another one-eighth of an inch from it. Where is the mind? One-eighth of an inch and four quadrillion miles are the same to mind. Would that some pillar would rise in space at the mind center of Nature, that we could fix our gaze and look in the right direction.

If mind has no center of radiation, it becomes infinite. Let a mathematician weigh the sun, Jupiter, the earth and extend the process to other suns, weigh Alpha Centauri, Sirius or Arcturns. The methods

of course, are purely mental, mathematical and abstruse. It is known from the basic laws of mathematics that there is but one way to compute the quantity of matter in our own or any other sun. Then mind original, would be obliged to make use of this one invariable method in set mathematics. For from the nature of numbers there cannot be two kinds of mathematics. Mind manifests in all that part of creation visible in the most powerful telescopes. At least, mathematics manifests; the highest manifestation of mind.

In the present state of science, electrons appear to be the first expression or manifestation of mind. Sirius and Vega, separated by 206 trillion miles; Polaris and Canopus, by, at a minimum estimate, four quadrillion miles; and both sides of the Galaxy by unknown and hopelessly immeasurable distance; these mighty bodies, suns and congeries of suns are all composed of one primeval quantity of electrons. Then electrons once filled all that sphere cut out of space included within that colossal equatorial band, the Milky Way. The sentence made up of these words: Electrons constitute the first manifestation of mind is indeed obscure. The word creation substituted for manifestation, seems to satisfy the requirements of that spark, scintillation, part, atom or portion of mind expressing itself as human in a brain. Then electrons were created and by mind. No other than mind can create, cause to be, to exist, to manifest. Creating, the causing to be, has for ages been said to be unthinkable. This is one of the most wonderful statements ever made by philosophy. Certainly creation of something from nothing is unthinkable, the reason why being—mind is unable to think of itself. Try diligently, and summon all latent powers as one may, then mind cannot think of mind. Space mind may be a coherent term: that is mind exists everywhere in space. It is known that we cannot think of infinity: this is a law of mind. If mind is infinite then space must be, since we cannot think of an enclosed space, that is a set boundary. Whatever mind may be, whether it fills space, whether finite or infinite, is unknowable to humans in their present state of mentality. But a greater than to know this is to know this cardinal fact, humans are personalities. This fact is more magnificent than the Pleiades, the Omega cluster or the cavern, fifty trillion miles deep in the huge nebula in Orion. All things, all enigmas, all mysteries, shrink and subside in presence of ourselves—our personalities. These sentences: "He willed to go"; "I made up my mind to do"; "I determined to have," cannot be analyzed. There is no clew to solution; no vulnerable point discovered open to any attack of science. A strange bolide falling on earth from space deeps may be analyzed by chemists: but so far in mind study no trace of a suggestion has come throwing light upon this problem: Who do "he"

and "I" represent? Who wills; who makes up his mind? These phrases in universal use, are inexplicable; they both may be errors; yet what sentence can be substituted for "I made up my mind?" The nature of the personality is unknown. Subliminal, sub-conscious, unconscious, super-conscious minds are obscure, and no attempt has been made at elucidation. The forty centuries from Badarayana to James, appear to have been whiled away in studies of mind. No ray was seen by the Hindu philosopher. James gave no explanation of what mind is nor a hint of the nature of personality. But fountains of the great deep were opened and illumined streams burst forth when electrons were discovered and isolated. These are the created units. From these all existing things are assembled. They appear in every existing object or form. How they became assembled into bodies, objects, forms, shapes, gases, liquids, solids, phases or elements of what is called matter is a question upon which now is clearly seen to be standing the colossal pillar representing Science—the real science of which all others are branches, the majestic and imposing Science, Mentonomy—the law of the mind. The corner-stone of mentonomy is that all forms in which matter is assembled are preceded by a thought-forms or patterns, specifications, or models. And these are elements or portions of mind. Thoughts are portions of mind, and precede all structural forms or bodies.

MIND INCLUSIVE

Since the only entities in existence are Mind and electrons, Mind is all inclusive. This is a most important statement. The centuries old problem looms above the mentological horizon: is Mind omnipresent if it is all inclusive? Or does central Mind send mentoids,—thought-forms as working messengers to all points of space? Is the word person the right one to apply to Mind if it is isolated in any one place in space? Can any word be substituted for the word person? If Mind exists everywhere within the Universe can we say it is space-mind, cosmic-mind? If so, can we call this omnipresent space and matter occupying Mind a person? Central and omnipresent Mind are two words absolutely opposite in meaning. Directivity positively cannot act from a center, or from a center to periphery without the transference of thoughts. Impossible, however, without radiation through space of thought-forms—mentoids, thought-bodies. Mentoids assemble electrons into atoms; these into molecules, these into elements and these into structural forms and these constitute the entire sidereal Universe and all within. For Mind cannot act at distances of thousands, millions, billions, trillions and quadrillions of miles through space whether empty or filled without transmission of integral units of itself. These are thought-forms. Basic, fundamental and cardinal questions are here involved. A distinction appears for a thought-form is an outline, a form including space, a pattern whose boundaries are lines without thickness. The shape is exact, a mental model. At once this becomes filled with electrons, it becomes a mentoid or thought-body. A still deeper corridor within this maze is this: do electrons assembled to fill out the boundaries of a transmitted mental image constitute a thought-body? It appears in the dim light of this part of the labyrinth, that electrons dissociated cannot form a body. That is, a body must be made up of atoms and molecules. Then the word mentoids should be supposed to mean thought-formed patterns. Grades in bodies may be the fact. Thus the word mentoid could be applied to a thought pattern only, entirely void within its limts; to a specification, or model filled out to boundaries with electrons or even with

atoms. These all must, however, be dissociated: the instant they become associated, coalesce or unite, they constitute a body—a thought-form filled out to every limit with matter. Manufactured, made, formed, assembled, builded, are words admissible in this elementary study of mentonomy; but not the words create, created, or creating, for only electrons have been created. Mind primordial, Mind supreme, actually has limits, it is impossible for it to create any entity whatever save electrons. Mind original cannot create one atom; but it is able to form or make an atom. The word make must not be used in place of the majestic, supernal and supreme word create. No word in any language can ever approach to within any finite distance, of the splendid word create. No other word has any trace of similarity to the mighty word create. There is no danger of substitution. Assemble is a better word than form, make or build. Electrons would forever remain electrons from the instant of creation, unless directed where to go to be assembled into atoms and molcules; and how by a director, an entirely mental director. Primordial Mind creates and directs. Activity is unknown in the assembling of electrons into forms extending from the first and smallest atom to largest sun. All whatever in this long series from atom to molecule; and from molecule to mass, is in the grasp and clutch of directivity; and the director is entirely mental. Even this director cannot act without first forming a mental shape or outline, a pattern or specification, roughly comparable to the delicate lines in the blue-prints used by architects and pattern-makers in foundries and workshops. For mentoids traverse all space so far occupied by structural matter, with a speed just falling below an infinite specific speed. For with infinite velocity of Mind transmission, omnipresence would exist: the thought at absolute instant of origin at any one point in space would be at any other at no matter what distance. This would destroy the concept of personality of central creative and directive Mind. For if Mind is of infinite expansion or traverses space with infinite velocity, there are no limits. But a personality is circumscribed within limiting boundaries. Mentoids therefore are radiating thought-bodies: but the word radiating means issuing from a center; a focus of radiation.

Then created electrons were either created in a definitive center and directed to where they now exist in points of

space separated by quadrillions of miles; or were created where they now actually are, in this enormously wide diffusion. A hundred thousand gigantic suns in one side of the Galaxy; and a hundred thousand on the opposite side, separated by space beyond all human imagination in its immensity, all composed of electrons imply the action of Mind at both places; and also at all points in infinite space where either electrons or matter exists. Then, if Mind exists at all points, it is omnipresent. If concentrated in one place; the reader may decide whether the word personality is the proper one to apply. But if centralized, then surely and inevitably, mental forms, mentoids must traverse all distances to the remotest electron, atom, molecule and mass. There positively, is no alternative. Action at a distance with no entity whatever in between has always been the rock in the way of science; and led to the hypothesis of ether as a carrier of energy by methods of wave-motion. A purely mental impulse traversing space must be a thought-form or mentoid. And mentoids assemble electrons on arrival, thus filling out the mold, form, or pattern.

MENTOGENY, ACTIVITY AND DIRECTIVITY

Agree with the inevitable deduction that nothing is in existence save electrons; that these are almost infinitely small and that they are electricity and nothing else. Imagine a definitive point in eternity when no two or more electrons were in combination; that is, no phase of matter was then existing. For if two or more electrons revolve around each other with excessively high and set and fixed specific speed, then the revolving electrons appear as matter. Let the quantity of free electrons exist as a sphere, having a diameter infinitely great, in frigid and infinite space. Then human imagination cannot commence a series of thoughts or imaginings regarding the sphere of electrons, nor of the included space, nor space external, so do not try the impossible. For the purpose of imagining, cut out a sphere filled with free uncombined electrons, having a diameter whose length is the distance traversed by light moving with the known speed of 186,380 miles per second of time during one million years, or 5,882,000,000,000,000,000 miles. Flight during one year is as completely unthinkable.

Imagine that the Creator, the Master Mind, desires to form matter from electrons, at any point in this cosmic sphere. A mighty problem arises. Mind exists in electrons enabling them to form mathematically exact crystals, or it is sent or directed to them. The question is, where does Primordial Mind abide? If two electrons originally know how to build an atom of matter, then they all possess this knowledge; all know how to form into silicon, carbon, gold, vanadium or any other element. Unless they differ, but electrons are all alike, so far as is known; then they must possess omniscience, a great improbability. If electrons know how to build a crystal, say of silicon, at any one point in the sphere, they might commence there. So might billions of others at as many points simultaneously, quintillions of miles apart. This activity all unknown to each other, theoretically, could convert all electrons into silicon, carbon, iron, copper, or matter in any phase. The entire Universe would then be all silicon, all gold, all iron, all hydrogen, as the case might be. For, unless each electron be absolutely omniscient, it would not know what all others were doing. This is the logical result of inherent activity. Not aware what all electrons were forming, there would be excess or diminution of the proper elements of matter. In this case it might occur that a balance in Nature would not obtain, that so delicate an entity as life might appear in turbulent cosmic wastes on worlds in space.

No, surely activity is not the watchword of Nature. Argue these basic problems as one may there is no escape from the fundamental law of universal DIRECTIVITY. Mind as at present manifesting in the human brain is totally unable to think of itself, or origin of anything whatever; of the Creator, or of the meaning of the words, end of existing things. Yet, since science appeared in the minds of men, there has not been a more persistent demand for an overruling Mind—the Creator, the Master Mind. Electrons are surely and positively directed to build up atoms, molecules and masses called matter. The omnipotent directing force is absolutely and positively Mind. And this assertion cannot be upset. It is self-evident and requires no proof. Mentogeny, Mind genesis, Mind creating, forming, making, directing, building, is the basis of all science today. Electrons certainly do not wheel themselves into atoms and these into matter of their own

will or volition. They are directed by external force, and this force is mental. A mental force is a Creator, the Creator. We cannot commence to think of this Creator—the reason being: Mind cannot think of Mind. Whence it appears that there is only one Mind in existence. Or, if one pleases, only one kind of Mind. If human Mind is unable to think of itself, it is of course, hopeless to strive to think of its origin. Self-evident, because Mind, or that portion of it, expressing in the phase called human, cannot think of any part of the meaning of the words origin, beginning, existence, infinity or eternity. We are hedged in between limits. However, these may be widening. Man may, after the lapse of sufficient time, see and learn of things, absolutely unknown and incomprehensible now. The word—Mentoids, may be here inserted, detached mind forms—thought-forms or thoughts. This scheme of matter-building is that Primordial Mind sends mentoids with a speed that is nearly infinite to all points where electrons exist, whether distant from each other quadrillions and quintillions of miles, whether at finite distances or infinite, and there directs electrons to first combine into atoms, then molecules, masses, worlds and colossal suns. These atoms differ entirely in the number of electrons they include, directions of revolution and fixed specific speeds, fixed and set by Mind. Mentoids by this hypothesis act entirely by their presence. This is the depth of the deep mystery catalysis. A few years since I wrote for The Nautilus an article on catalysis, matter acting by mere presence only; accelerating all kinds of chemical combination, integration and disintegration, without itself being affected, and with no less of catalytic power during eternity so far as science can now see. Blind, inherent activity in electrons could never have wrought adjustment so fine that life could appear.

WITHIN THE MENTAL MAZE

Mind has wrought mighty works. It has weighed the entire earth, computed its specific gravity and from that, its mass or quantity of matter. Mind has weighed, discovered the mass of the sun, and computed how much greater is the quantity of matter in the solar than the terrestrial globe.

Mind, expressing and functioning along the way of mathematics has told the mass of the entire solar system, even out

to Neptune, distant 2,780,000,000 miles from the sun. Mind like Columbus standing on the shore line of that barrier—the Atlantic, became impatient—launched into the depths of space, made a voyage of 25 trillion miles, reached the star Alpha Centauri, the nearest neighboring sun to ours, and weighed it. Mind made a flight to a distance twice as great, to the sun Sirius, and deduced the mass. Then to farther away Arcturus, Rigel, Procyon Aldebaran and Vega. Binary and ternary suns were thus weighed, their times of revolution discovered and predicted. By means of that transcendent product of Mind—the telespectroscope; suns invisible in the most powerful telescope alone, were weighed and their times and speeds of revolution discovered. The invisible was sensed by Mind. Approach and recession to and from the earth's track in space of distant suns were detected by Mind, and their rates of motion. Star drift was discovered by Mind, and streaming of the distant suns, in opposite directions, giving a rotary effect as seen from the earth.

An apparent if not actual rotation of the entire sidereal structure has been made known by Mind. This expression—made known to Mind, would change all our ideas. Two great star streams in opposite directions, like opposite sides of a wheel, have been discovered. Mind has measured the intensity of the light emitted by all suns above the fifth magnitude. Mind has discovered the velocity potential of a number of rapidly flying suns, and from this, the quantity of matter which must be able by means of its gravitation, to impart such speed. Mind has apparently by mathematical and photometrical methods discovered a diameter of the stellar universe so great that light moving with the Mind discovered speed of 186,380 miles per second, requires sixty thousand years to traverse. Mind invented the sensitive photographic plates—turned 25,878 of them upon the sky of night, photographed the entire celestial vault, and thus imprinted the delicate images of without doubt, one hundred million suns. Mind then compared the probable mass of all these computed as one, to that of the invisible quantity of matter required to establish the great velocities observed in the flying suns—those having excessive motion, and found that it may almost be ignored. Mind overcame almost insuperable difficulties in measuring the distances of a few of the nearer stars.

Mind performed the seemingly impossible in measuring the velocity of light, a speed of 11,182,800 miles per minute. Now is there a thought-velocity? Does thought travel from Sirius to Vega in the one-hundredth part of a second? Or, are mental images or concepts of both stars side by side in the Mind? And is there a fundamental law here, just beyond reach? Mind, has by means of its impetuosity and restless onslaughts, stormed the very battlements and the very base of the sidereal structure, the, to Mind enmeshed in the brain of man, or imprisoned therein, practically infinite. Infinitely large; but this Mind manifesting along the human way has also peered into the depths of the to it, infinitely small.

THE MICROSCOPIC UNIVERSE OF LIFE

Mind has made the ultra-microscope. Beside this instrument of almost infinite power, all other microscopes are indeed finite. Particles whose diameters are so minute that 250000 side by side would form a line one inch long are seen by means of this powerful instrument. And living microbes have been photographed in the midst of their rapid motions, of excessively small dimensions. These photographs were taken at a rate 33 per second or 1980 per minute. By moving these films before lenses illuminated by strong electric light, projections of an almost infinite world of intensely active life are thrown upon a white screen, magnified from 10,000 to 20,000 diameters. The eye of man has scarcely rested upon scenes more wonderful; millions of these incredibly minute living creatures are observed darting to and fro with amazing activity. A drop of blood from a living mammal, so small as to be almost invisible to the unaided eye, is a marvel in this microscope. These are the ultimate of life, so it now appears; and how minute are their parts? Imagination is submerged when striving to imagine how minute these living things are. The word Universe may as well be applied to the invisible and infinitely small, as to the visible and invisible infinitely large. It seems that infinity is gauged by capacity limits. Thus one hundred is infinitely large to a mentality unable to comprehend more: likewise one thousand. The discovery of invar, an alloy of metals one of which is nickel-steel, has placed in the hands of physicists a substance of priceless value. This metallic compound has an expansion

and contraction so small as to be insensible within all changes of temperature in natural air. For centuries, if an accurate physical measurement of length had to be made; troublesome computations were required to determine the changes in length of foot, yard and meter rules; and of all surveying tapes and rods. All this world of trouble and sea of errors is now avoided by the precious and changeless invar. And seconds pendulums have been made which measure one second of time to within an error of one part in 500,000. This implies that the length of the pendulum had to be made with equal accuracy. This work is also a measure of the force of gravitation with like precision. Cut up a one-grain weight into 3222 parts: then chemists weigh one of these within minute limits of error. The measurement of speed of light, 186,380 miles per second, has ever been considered a very high achievement of Mind; but the time required for it to move 75 feet has been measured. Mind directs hands to make fine rulings with diamond points on glass and metals as many as 25,400 in one inch.

But all these delicate measures are crude compared with refined determinations made in electricity. Vacuum tubes, glass bulbs from which all air is removed to the limit of possibility, permit matter to assume what Crooke's called the fourth state—ultra gaseous. Excessively small particles fly from electric terminals with terrific speeds. Mind has discovered the quantity of matter in a number of kinds of these, and the minuteness at once surpasses all human powers of imagination. These, the smallest particles in existence, are pure electricity and are called electrons. A row of them side by side, one inch long, would contain 12,700,000,000,000. All these now known wonders and many more within modern science realms have been revealed to humanity by the research and skill of Mind. The reader will observe that in every instance mentioned here, of triumph of Mind over material difficulties and discovery of law and facts, was brought about and consummated by the aid of refined instruments, mechanical appliances, lenses, spectroscopes, bolometers, the wondrous ultra-violet light microscope, the retort and, greater than these—mathematics. Invar and all these, sense nature in her mystic modes.

NEW CONCEPTS OF ELECTRICITY

The latest ideas and theories regarding the true nature and structure of electricity are so completely different from any held before the years 1899 to 1901, that the older hypotheses can scarcely be recognized now. All college text-books now being published contain the new beliefs of electricians and chemists.

The one great fundamental difference between the new and old is that electricity is now known to be granular—that is, not continuous. Matter, whatever that is, has ever been held to be granular, made of discreet atoms and molecules, collections of atoms in regular and definite proportions. Electricity was held to be a continuous fluid not only inside of atoms but in spaces between. This doctrine was all changed by the capital and cardinal discovery of the ages, the discovery of electrons, far smaller than atoms. An atom of mercury is about 300,000 times heavier than an electron. An atom of hydrogen, the lightest body known, is 1700 times more massive than the primordial, absolute, changeless electron. No imagination, however vivid, can hope to begin a series of imaginings about an atom; how then of an electron? These electrons are pure, negative electricity, and revolve around positive centers of force, and these centers and these revolutions constitute atoms. Atoms unite in absolutely regular mathematical ratios to make molecules of at least eighty-eight kinds, called elements. These unite with each other where there is chemical affinity to form multitudes of compounds, which unite to build the entire universe.

The strict attention of the reader is called to the startling fact that matter is a motion of electrons. An atom of what for centuries has been called matter is now defined as revolutions of electrons around a center of force. This is the present explanation of an atom of iron, platinum or diamond. All matter known can be torn apart and resolved into electrons. And these can be driven out of any container whether of glass or solid metal, and be thus made to vanish from the scrutiny of man. This is a round-about way of saying frankly that nothing exists but electrons. Nothing is known as to their real nature, nor of anything else. This is also one way of saying that nothing exists but motion. The universal, cosmical ether, if it exists, is beyond doubt nothing but electrons.

If so, then the 100,000,000 visible suns, and the billions of invisible worlds are next to nothing in comparison with the quantity of electrons in existence. Electric, magnetic, electro-magnetic, electro-chemic, optic, electro-optic, thermic and electro-thermic activities can all be satisfactorily explained by the theory that negative granules of electricity—electrons—revolving with terrific speed around enclosed centers of positive force. And these effects are explained by saying that electrons revolve around on orbits inclined to each other, not all around atomic equators. Note the meridians on a globe representing the earth; see how they make angles with each other. Call them orbits of electrons, then the flights of electrons on these inclined paths constitute the life of the entire universe. Science has no idea as to what electricity is, nor force, nor anything. This is the modern electronic theory of matter: revolutions of nascent, negative electrons around positive, with differing, yet set specific speeds and directions at varying distances.

Electrons were created and upon desire of the Creator to appear as atoms were directed to form into them; and upon further desire into molecules, and later into masses elemental and then into compound masses. These complexes were all directed. The first step of the Creator to be rid of a part of this load of work was to create life, an assembler. Thus life in the minute germ of an acorn will assemble several tons of matter into a huge oak tree. Now we are entering dangerous grounds in our exploration of the Mind-maze; trap doors, hidden passages, treacherous stairs, and obscure steps. Thus does a tree come into being by means of activity or directivity. If by activity, then atoms and molecules possess activity. This is untenable, for the original electrons did not. They were directed. Aotms were directed to form elemental molecules. But this question storms the very gates of the maze. Does a rose exist by means of activity or directivity? Do the germs of the oak and rose assemble? Does a microscopic germ in an acorn assemble or attract a ton of carbon and form it into oak wood? Or is this carbon directed to assemble within and thus expand a tiny pattern of an oak tree latent in the germ cell? Mysteries deepen from light shades to deep darkness—for this writing has reached the point in cosmic advance when the mystery, LIFE, first appeared. Does the rose germ attract, draw, assemble, central-

ize, form, condense, precipitate, fix, or deposit carbon in its beautiful petals? Or does the pattern of the rose within the germ, the idea of the rose, the thought-form, or mentoid attract, assemble and build? Does the germ attract, or thought form within the germ? Now the reader is well aware that it is the Mind-form that does the work of building the rose. One may argue this question for a year with himself and come around a circle to the starting place. He may traverse every corridor and way within the maze, and then end all research by saying that the Mind-form assembled the materials into the rose. And that there could not possibly be a rose without a preceding mentoid, or phrenoid, if the reader prefers. Thus the mental base of Nature is again encountered in these explorations when the first life, the first living entity is approached. Thus directivity reigns from electrons to highest plants.

A monad in the speculations of Leibnitz, is an unextended, indivisible and indestructible unit, endowed with both physical and mental properties, not susceptible to changes wrought by external force. It has within itself the power to produce all changes it experiences to eternity. These units make up the Universe.

This sentence should be changed to: An electron is an unextended, indivisible and indestructible unit of electricity unendowed with both physical and mental properties and highly susceptible to changes in position wrought by extended force. It does not have within itself the power to produce all changes it experiences in eternity. These electrons make up the Universe.

For acting from within is our familiar activity, which never obtains in inorganic matter. An electron is not endowed with physical and mental properties. Physical properties could not exist before matter, nor matter exist before electrons revolve around each other. External force sets them into revolution, and this force is Mind.

WITHIN CREATION'S DEEPS

Look at a diamond having fifty facets, or flat sides, and you will see twenty-five, those in front, while those in the rear will be invisible, owing to the fact that the interior is filled with opaque matter. Let a brilliant point of light be at each

angle of the gem, and the edges of the faces be lines of light, then all matter may be removed and the diamond will appear in shining outline, front and rear.

Ignite the end of a thin stick of wood so that a spark of fire will glow; revolve it is a circle in a dark room at a rate of nine times per second, and a continuous ring of light will appear. This is due to the fact that an impression of bright light endures on the retina of a normal eye one-ninth of a second.

Let an electron in total darkness move with the standard specific speed—the velocity potential of all cosmic energy, as heat, light, electricity, actinism, chemism, and thought?—of 186,380 miles per second, and it will emit light. If the motion is on the circumference of a circle, the circle will stand out in black space in living light. If one electron should move through the three angles and along the three sides of a triangle, in darkness, then a glowing triangle of light would flash out in supernal beauty. All plane geometrical figures, quadrilaterals, pentagons, hexagons, or all regular polygons, may thus be cut out or described in space in light by only one electron when moving at nature's specific speed of light. But these are only planes and form sides of crystals. How generate an entire crystal, so that both sides, all the angles and faces, front and rear, can be seen in the dark? Let one electron move at the specific speed through each angle and along each edge of a tetrahedron, hexahedron, octahedron, to the icosahedron, thence to any regular polyhedron, pyramid, prism, or cut precious stones or gems, and they will stand forth apparitions of transcendently beautiful jewels. Instead of having electrons vibrating at the apex of each angle, there would be as many electrons as angles. To make a solid crystal appear (apparently solid) one electron only would produce the same effect of solidity if its motion was sufficiently rapid, through all the angles and edges. Now, atoms of crystals are geometrical forms, all made up of varying combinations of electrons. So far in this study, form only outlined in light has been mentioned.

The retina is slow in reaction, enduring one-ninth of a second of time. The ear is more sensitive. Let impulses from a tuning fork reach the tympanum at a specific rate of 128 per second, and the separate beats cannot be detected; one note only is heard—continuous C. Double the rate to

256 vibrations, the sound is one only—middle C. Let slight impacts be made on one's finger. If of sufficient rapidity, the sensation will be that the finger is touching a solid. Let a stream of excessively fine grains of sand be touched by the finger-tip. Then it will appear to be a moving solid wire, if the speed is great enough. Suppose that the sand grains made contact at a rate of 128 per second, and that the moving-wire effect would be sensed. Then, if the particles are in motion with cosmic specific speed, that of electrons, the distance between them would be 1,460 miles. Space occupied by matter with such distances between atoms or molecules would be called nearly void. Yet, would seem to be solid with these speeds.

Imagine that all the edges of the faces of any crystal to be placed end to end, and that the combined lengths equal one inch. Let this be traversed by only one electron at the standard specific speed, and it would be rigid—a dense solid to the sense of feeling upon being touched, yet almost entirely empty of what is commonly called matter.

Electrons build matter by merely moving. What electrons are is unknown; but in the present state of science they cannot be distinguished from pure negative electricity.

The rates of oscillations of electrons required to establish light, range from 732 to 762 trillions per second. Suppose that rates of electrons in iron, platinum or diamond, are equal to one-fourth or one-half these, then solidity could be accounted for when partially empty of atoms and molecules. The angles and edges of these bodies traversed by electrons with these speeds would seem to sense as solid.

The interiors of crystals are filled with neutral electrons, positive and inactive. Free, uncombined, negative, nascent electrons and atoms are the workers and builders. These continually deliver motion and others instantly begin to work with incredible fury and power. See this: Nascent is a Latin word, based on the root nascor, to be born. Thus the universe is alive—it is being born incessantly, and dying. The rates appear to be equal, so far as science is now able to see.

Mind is never quiescent, nor are electrons in all that part of the sidereal Universe within the critical powers of man. The expression, "Matter proceeds from matter," is impossible and has made confusion in physics, chemistry, and biology.

Matter proceeds from the infinity of electrons. Nothing exists but electrons; for matter in all its forms can be resolved back into them to the primordial sea of space electrons.

If electrons contain no activity, but are entirely directed, then of course, Mind existed before they did; since in the inherent nature of language, Mind only can direct. If they are endowed with inherent activity, that is, they act of themselves and direct themselves, then Mind by far the most wonderful entity, one surpassing all limits of imagination, is of late origin, since it is found only in the brains of man and animal. Physiological and anatomical science is able only to discover Mind in organic substance. But these are the last to appear upon the stupendous cosmic scene. Unless the electrons are mental, or at least impressed with mentality in absence of directivity, the entire structure of nature, the Universe of billions of suns and more billions of worlds, came into existence and matured to the present elaborate and complex state entirely without the agency of Mind. Is any such doctrine tenable? Titanic forces—cosmical, meteorological, geological, thermal, electrical and chemical—labored in elemental conflict for ages here on earth, and finally became so equilibriated to a nicety, to stillness and quietude, that an amœba—a delicate living being—might appear, a being containing Mind.

Man is a creature subject to terrestrial changes. Slight increase or diminution of the heat energy received from the sun would annihilate man and all other life on earth. Is it possible that the sun and earth were prepared and brought to their present even balance and adjustment without Mind being in existence, either in activity or directivity? Or, if all animal life in the universe should be annihilated, would Mind come to an end? It thus appears, for no Mind has been detected separate from organic, that is, animal, life, unless it be in electrons. The action of a mathematical Mind is ever on display within all that portion of the universe within range of the telecamera. So far as human scrutiny is able to detect, this Mind is exterior to created electrons, that is, electrons are not eternal units of Mind.

The old-fashioned assertion that matter is eternal is as obscure as the statement that it has been evolved. For by the hypothesis here presented, electrons only were created, and these were formed into matter by mental processes. To find

the Creator is to discover where Mind makes its first manifestation. This certainly was in the creation of electrons. This series is merely a restatement of the long-time riddle of the universe in another form. The hope is here expressed, that others may solve the riddle. One cannot write on this subject without using the words knowing and forming. Then the intricate problem arises, how can Mind now expressing as human know of electrons unless the knowing of man is of the same order as the knowing of the Creator of electrons? They assuredly act to form atoms from an impulse without; they are directed from without; if so, Mind is indeed so inconceivably near to each electron that it may be said to be immersed in directive Mind. If not this, then the mental force after creating electrons impressed or taught them how to build themselves into matter and then into the Universe: and apparently withdrew from the active scene of turmoil and turbulence of matter. For all discoveries in recent science lead to one conclusion, viz.: electrons act from an impulse without. Man may never secure a glimpse of creative processes, but the idea that there is a Creator, a Creative Mind, behind all existing things, is exceedingly ancient and exceedingly modern. Science demands the existence of this Primordial Mental Cause, even if unthinkable by man's present mental powers.

THE CREATIVE MIND

In searching for the Creator, it is doubtless well to confine ourselves to some assignable limit—to a circumscribed portion of space for exploration. For purposes of this study, the limit selected is a sphere, cut out of space, having a finite diameter of one hundred thousand light years, a light year being the unit of space measurement, or the distance traversed by light in one sidereal year—31,558,149 seconds—moving with a constant specific speed of 186,380 miles each second. The length of this yard stick is 5,881,807,997,000 miles, which number multiplied by 100,000 will give the linear diameter of our hypothetical sphere, where Mind in exploring can stop for rest and quiet, for stillness and solitude, for the wondrous silent hour.

Beyond doubt the Universe of suns and worlds is wider than this. At the remote epoch when this exploration opens, this colossal sphere contained nothing but electrons. These

Lowe Observatory—On the summit of Echo Mountain, Sierra Madre Range, Los Angeles County, California, U. S. A. Altitude 3,420 feet. Opened 1894, by Dr. Lewis Swift.

were free, for no two, nor multiple of two, had combined to form an atom. My theory is that these had been created, although I am unable to think of the process of creating. We at present are as children in school writing words on a blackboard, soon to be erased. The nearest approach yet made to discovery of any trace is in electrons. All words so far written on causation since human speech began may as well be erased in presence of electrons. Suppose that at the end of any definite series of cycles of eons, let us say two electrons began to revolve around a center in between at a set specific speed, in orbits forever fixed in definite diameters and directions of revolution, whether from left over to the right, or from right over to the left, then the first atom of an element of what chemists call matter appeared. This atom was not created, the two electrons formed it. The electrons only of all existing things were created. This assertion is based on recent deductions of physical science. The electron is a product of creative Mind; the atom of directive Mind. To create is to produce. The words produce and form are widely different in meaning. To produce is to cause to be, to exist, while to form, is to build of already existing things; in this case not of already existing material for matter did not then exist for by hypothesis electrons had not commenced to revolve around each other. Hence, electrons only have been created, or produced: all else whatever has been formed of electrons by directivity—direction. The word thing is excessively elastic and expressive, and is here used to avoid th use of the word matter, even before matter existed. Things, used above relate to electrons, simply because there is no other word. The theory that possibly electrons are dual is false, they are units absolute and indivisible. No entity whatever save Mind is able to create them and set them in revolution. Then the words force, mind-force, force-center, are redundant, and may be discarded leaving only Mind supreme. Electrons move with high specific speeds when nascent, free, uncombined, and also when in combination thus constituting atoms. This motion is the life of the Universe.

MENTOLOGICAL RESEARCH

Mutation requires a mutator; changes, a changer; and evolution an evolutor. The word Creator is here substituted. Mind

created electrons, and expressed itself in models, forms, or patterns. A mentally formed pattern for the assembling of electrons is as indispensable as are patterns in an iron-foundry or in looms weaving fabrics. The "unextended indivisible units" of Leibnitz are electrons, created and then wrought into forms by Mind. A lifetime expended in arduous research in telepathy in the mental world, and catalysis in the material, would no doubt make the most valuable discoveries. These entities appear to be somewhat similar; they act by presence, not by contact. And they both lead to results entirely unlike themselves—they "pass into something else," (Hegel). My object in toiling—no imagining without toiling—in caves of gloom, in canyons wild, on mountain heights, in wastes of night, in clouds profound when they abound, and in solar light when all is bright, is to introduce the words Creator and Mind into literature again, after their disappearance a number of years since. Suppose that the word "quantity" could be applied to Mind; then if Mind exists only in this wide Universe in the brains of man and animals, then the quantity of the most magnificent entity in existence is very small. The greatest becomes the least.

WITHIN THE LABYRINTH

Readers can help discover the laws of Mind if they will. I do not know a single law of thought. Nor, indeed, if Mind obeys law. But all else whatever, in the entire range of human experience, is held in the clutch of rigid law. The inference may be made that Mind is governed. Here in the start, a distinction of great importance must be made: Is Mind ruled or is it a ruler? Is it governed or does it govern? If Mind rules, does it rule all existing things as sole governor, or has it a helper or coadjutor? This book is written to advocate the hypothesis or rigid truth that Mind is the sole Creator, ruler, governor, president, monarch, dictator, arbiter, controller and manager of the Universe and all it contains. If this be true, then Mind does not obey law, it is the law. This volume is a collection of apparent facts; and upon these it is sought to establish a theory. Further: the hope is expressed that a law or a number of laws herein be discovered or deduced. Hope may not be entertained, however, of deducting mentological equations with the precision of those in mathe-

matics. Facts, or what are believed to be facts, will be presented from time to time; and from these laws, or dim outlines of majestic laws, may be rescued from almost impenetrable mists. And readers are invited to aid as explorers far and away within these fascinating realms. Deep within, if they so desire for the word deduce is derived from the root de, down, plus duco, lead.

A clue, one leading surely along a few corridors of the Mind maze, may be had in studying what Mind, expressing and manifesting in, or through the brain of man can do, discover, comprehend and use. Mind entering, acting within and escaping from cells and cell filaments in the brain has done wonderful things and is able to perform greater. The word filament is based on the root, filo-spin, derived from filum—thread. Now let us, you and me, spin long threads and sink them as sounding lines into mental depths. Let us imagine from the time of starting from the shore, that we have really launched upon the deep.

Mind can think of the star Vega, and then of the star Sirius, both within, from the one-fiftieth to the one-hundredth part of one second of time. The distance between these two giant suns is 206 trillion miles. But the same would obtain with the two suns distant more trillions or quadrillions of miles. See this: and the same with a distance of any assignable number of miles. One stupendous fact has already been presented. From this a law, or what appears to be a law, can be deduced.

Mind digging and delving within the mathematical maze discovers all potent laws of numbers. These laws are so abstruse recondite and comprehensive, that none save mathematical Mind is able to commence to think of them. Mathematicians daily handle enormous numbers, billions, trillions, quadrillions, especially those exploring the mazes of astronomy and electronic electricity. These numbers are expressed in writing words, or figures, and by symbols. Yet no mathematician can by any effort of thought recognize one million. Indeed, none can comprehend one thousand, and possibly not one hundred in entirety, by one concentration. This leads to another apparent law.

The word miles was used to express distance in deducing time. But the Mind actuating in man is conditioned, limited and environed by numbers. Then numbers cannot be ap-

plied to space. An overpowering fact stands out: space is infinite.

This is inevitably a truth, a rigid deduction from what appears as a fact—Mind cannot be lost in space. Numbers can, for let 97582976388549 represent miles, and let this line of figures extend around the equator of the earth, each unit representing one mile: then the distance thus expressed is an infinitesimal when compared to space: thinner than the edge of this sheet of paper, compared to the width of the building in which the reader may be. Whence it appears that no number can represent infinite space, nor aught that is infinite, nor Mind.

INFINITELY SMALL

All that part of the universe of life invisible to the unaided eye, but clearly visible in the highest power microscopes abounds in Mind. The living, moving microscopic beings, so small that more than 50,000 side by side would be required to make a line one inch long, know from within what to do; when and where to go. This is activity. Electrons, atoms and molecules not possessing inherent activity are directed. An animal, no matter how small, directs itself, and this because it possesses Mind. A highly complex crystal requiring high geometry to analyze and comprehend, is more intricate by far, so it would seem that an amœba, a minute bag of gelatine filled with gelatinous water. All who would compare the two side by side would assert that the crystal is of a higher order. Let opinion favor the crystal; then it will fail before the mystery profound of the nucleus within the amœba. The nucleus is the abode of Mind. It is far and away more wonderful than a diamond: and the tiny speck more elaborate than ruby or sapphire. The abiding place of Mind is more inscrutable than all else in existence. The mental properties of the microscopic life-world are simply amazing. Mentation is at times rapid and acute in the realm of excessively minute living creatures. They decide where to go with great celerity, then instantly act on this decision.

The object of the Mind Supreme in creating life was to establish activity for the first time in the entire Universe.

Mentoids are directors of electrons, the actual builders. Electrons are actuated by external mentoids; they do not, cannot act of their own will or force. Mind, primordial and

eternal directs, and that not by contact, but by presence. This is a rigid truth. The entire Universe is set in mathematics, but this is the highest manifestation of supernal, sublime and Supreme Mind. Latent faculties of the Mind human are aware of the Mind Supreme. This subject is magnificent in majesty and magnitude. Astronomy is the law of the stars; Mentonomy, the law of Mind. Many facts are known in Astronomy; not one in Mentonomy. The name of a mighty science stands alone. No law is known of Mind, and no clew or hint as to what it is. It is all powerful; and rigid sciences, physical, chemical, material call for its existence and directivity, resulting in activity of electrons, resulting in the sidereal Universe and all within its mighty boundaries—if it has bounds and limits; mighty beyond hope of thought if it has none—is infinite. Even trained mathematicians cannot think of infinitude; the highest do not try.

EVOLUTION

Latin evolutio from evolve, to roll out or forth, unfold, or unroll, from e, out and volvere, to roll, to turn round. This word and all it implies in its many differing shades of meaning and application lies at the base of the philosophy of Lamarck, the Darwins, and Wallace. It has been called the foundation word of an entire new era in science. And by others a solution of the one great riddle of the Universe.

Evolutionism is the theory that the Universe, or at least that part thereof within range of human scrutiny and all it contains, was not originated once and for all coming time; but that it is in a condition of growth, change, development, progress and mutation. Between emanation and evolution there lies a great gulf, so wide that it cannot be bridged. In emanation, the primordial power, force, or principle, that sends forth emanations remains itself unchanged in quality and attribute; like a steel magnet magnetizing other steels in unlimited numbers, without diminution of its original force. In evolution, the primordial force, if such is conceded to be in existence, itself changes. Scarcely any two theories can be wider in difference. Another gulf in between, is that in emanation, development, and change, descend from high to low. In evolutionism, from low to high. Both doctrines agree in one point, they exclude the necessity of the existence

of a Creator. And they have not substituted any other word, such as emanator or evolver. So far as one can deduce from the writings of adherents of the hypotheses of emanation and evolution, all entities in existence act of their own inherent powers, of themselves. Argue as one may, both come under the meaning of the word activity. Directivity, its exact opposite, is not in evidence. In a restricted sense, the word evolution has been applied to the development of organic life from inorganic matter; and all subsequent changes in plants and animals.

The theory of evolution is divided into two branches. The first holds that all changes and mutations are from within; some internal, inherent force produces all changes. The second ascribes all changes to forces from without. Since the word mechanical is constantly applied to all processes due to outside causes, the action of Mind, is not mentioned. Nor is Mind taught to be the cause when acting from within. Thus evolution as taught can be resolved into our familiar words activity and directivity, both functioning without the agency of Mind. Plato's world of thoughts is ignored. Of course the word mentoids will be excluded; along with Plato's permanent supply, fund, or store of ideas. Hence all things can be without pre-existing ideas, thoughts or thought-forms. Mind, thinking, planning, creating, forming by the action of Mind are not necessary, not required.

Attempted exclusion of purposeful intelligence from the cosmos is always destined to fail. And this from the Nature of thought itself. Inert, and the living both demand a plan. The term "conscious plan" has been published. But the words conscious and consciousness are deep in meaning. One phase of meaning may be that the human Mind; or a Mind having every quality and attribute now displaying as human, in absence of matter, may not be in a state or condition where conscious would be the true word to use. Thus in certain types of mentation, in peculiar phases of dreaming, the presence of matter is not sensed; yet the Mind is in hyper-activity: and with range vastly increased.

The purely mechanical by no means explains anything it accounts for nothing, and without Mind, all things within human cognition are inexplicable. With Mind at the helm, coherent concepts emerge from mists, for plans are discovered.

Leibnitz taught the cardinal principle of directivity: that

the directing force possessed intelligence, and was therefore a mental Director. Positively, evolution could not obtain, that is, one entity succeed another always in order and in a work of advance, without an intelligence behind the process. The mutations are surely ordered, directed, influenced or impressed from the outside. The descent of Mind into matter is a very ancient idea, and one widely believed throughout all antiquity. Why use the word descent? Mind created matter is ambiguous. "In the beginning, God created the heaven and the earth," was well enough for the ancients.

In the beginning the Creator created electrons; and then formed the sidereal Universe and its contents.

This is the form suited to the moderns.

THE PROCESS OF BECOMING

See this: "Monad. In the philosophy of Leibnitz, one of the unextended indivisible and indestructible units that made up the universe, endowed with both physical and psychical properties, not accessible to change from without, and having within itself the power to produce all the changes it undergoes from the beginning of its existence to eternity." (Standard Dictionary of the English Language—art. Monads.) This is a concise statement of the true teaching of Leibnitz, the great philosopher. In the light of the discovery and isolation of electrons, and of telepathy—the action of mind on mind at a distance—this doctrine of Leibnitz, after ruling so long in the world of metaphysics, must give way to its exact opposite. "Having within itself" must be excluded from all future writing. This is activity. "From without itself" must be substituted. This is directivity, an indestructible fact. Schelling's concept of the identity of knowing and being is true; likewise that of Spinoza—namely, the order and connection of thoughts are the same as the order and connection of things. Hegel's process of becoming, of the union of position and negation, is that all that becomes passes into something else—removes itself. Identical with this is his process of thought; it also becomes something else. This is a fallacy: thought manifests itself as a thought-body, a phrenoid, and then appears to become something else. This is done by the immediate assembling of electrons into thought-forms or bodies. This is not intricate; for let a thought-form be directed to appear by

the Creator, then it begins to fill out its pattern with electrons until the body is complete. And always under inevitable and eternal mental directivity. Armageddon must rage around and about two words, activity and directivity, until the concept of electronic activity is annihilated, in the majestic presence of directivity.

ALL MATTER DIRECTED TO APPEAR

There is no rest in Nature, perpetual motion obtains. Thought-forms develop within range of human scrutiny, vision or consciousness like the mysterious emergence from realms invisible, from the world unseen, of images in a dark room on a sensitive photographic plate in the developing solution or bath. Change appears to be the only permanent entity. Eternal forms entirely mental assemble electrons within themselves, and completely fill them out to minutest limits. The result is the formation of material objects within immaterial forms, mental outlines. A crystal entirely geometrical, composed in space, of angles and lines existing as a thought pattern becomes filled by electrons in atoms, themselves inconceivably minute crystals, and a real, solid crystal appears. This process is formation. Forms do not stamp themselves upon objects; electrons are assembled within these forms, all mental; the result is a form composed of matter. Mind is the only assembler, former, builder, maker. Back of all these lies Mind—the Creator. Archetypes and prototypes, are thought-forms, patterns, blue-prints, models, all in excessively delicate mental outlines. A thought-form may have length, breadth or thickness. Filled with electrons, atoms and molecules, the forms become material lines, planes and geometrical solids. Even geometry calls a space-form a solid whether or not it encloses matter. Thus mathematics can exist in abstract in an expanse of electrons not yet matter; but substance, or sub-matter only. Geometry can exist in an absolute vacuum, as pure thought-forms. And did before electrons.

With Aristotle, forms were the only absolute realities. Whenever these made expression in matter the manifesting was purposeful. Had he known of electrons, his scheme could now be called almost modern. The process of evolving inanimate, into living matter has been so slow and gradual;

and the successive changes so minute, that with modern research, the breaks in continuity can scarcely be detected; or demarcations discovered. The entire work of producing man, the mental animal has been by the well known means of trial and error. Combining these three words into any one such as evolution or mutation, is of no importance, who cares what word is used, the basic rock hewn fact and foundation of all existing things is simply trial and error.

ONLY ELECTRONS CREATED

The working Mind profits by experience. This is the Nature of Mind. If not, it could not expand, improve, approach perfection. Aristotle's process of evolution was from low to high; and he called it a change from potentiality to actuality. We now would say: Changes wrought by Mind in combining electrons. The high, original principle of the Neoplatonists forever remains unchanged, even while all things are emanating from it. Primordial Mind when creating electrons may not have changed, since they are all alike. But change in forms and thought-models is incessant now. It, of course, is not known whether new electrons are now being created; or if the total quantity was created once and for all time. The word all, cannot be joined or applied to the word eternity. Nor can any other word, not even the word during. The theories of evolution of the Ancient Greeks would have been cleared at once had they known of electrons. Likewise the endless hypotheses of medieval times. Bruno would have been aware immediately that there is a difference in between matter and form. For objects are forms designed by thought, and later filled out with atoms and molecules all established by motions and nascency of electrons. Evolution with its doctrines, ramifications, theories and speculations is not modern, it is as ancient as the Aryans in trans-Caspian regions, in India, Iran, Greece and Rome. The modern furore is a rejuvenescense. And theories now coming to the front, are rearranging the order of the terms as in equations. The ancients discovered evolution and worked out details as well as could be without the aid of modern instruments such as telescopes, sceptroscopes, microscopes and a knowledge of the fact that nothing exists but Mind and electrons. For the space-sea of electrons is the cosmic ether. Conceptions of this

ether are very different from those of the ocean of electrons, for electrons are used in the formation of matter, while by hypothesis, ether is not. A load is lifted from the patient shoulders of cosmical physics in substituting the silent sea of electrons for one of ether.

CONTINUITY

Draw a line with a pencil, and the particles of graphite make up a continuous line. Raise and lower the pencil point many times in traversing one inch. The result will be a line of dots—discontinuous. Thus genera of all organic beings follow continuously; but in between classes or divisions, there are intermediate beings, or if not, the progression is comparable to the line of dots. If continuous, the process of merging obtains: if not, as in the case of dots, then new patterns appear. Variation and mutation, occur, but these take place in mental patterns, external to the objects or beings formed. That is, a change in matter is inevitably preceded by a change in mentation. Changes in specifications precede changes in objects. But Mind only is able to make or change these specifications: and then fill them out. In building a house of concrete or cement, the boards are set up to plan, and the mold thus made is filled with the mobile matter. It sets into a solidified form. Then the mold is removed. Visible creation is builded after plans and patterns, entirely mental. And Universe building cannot begin without preceding mental forms. This is the mental base of Nature.

It is not yet determined whether evolution is a continuous or dotted line, reaching from electrons to giant suns; or from "Monera to Men." If continuous, specifications insensibly change, and the final shape or pattern is very different from the first, especially in organic things. If the concept of the dots obtains then separate patterns appear without the cumbersome merging.

Changes are separated by intervals. Then the original Mind is experimenting and actually learning by experience. And this is a reasonable hypothesis. As reasonable at all events as is the action ascribed to "deaf, dumb and blind force."

The originator of this expression failed to see that a deaf, dumb and blind force, must of necessity be directed if it is

to accomplish anything and do work. The theory that one "being originated from another," is a flight of fancy. For it in that case it originated itself. If not, then the other formed it. A very confusing idea; making turbid instead of clearing. And how can totally unlike objects or living beings come or descend from one common source, unless that source be the Creator? For all matter did not descend or ascend from the first or one common atom; nor animals from the first cell.

THE MIND OMNIPOTENT

The most absurd idea of Schelling was that of Nature being a precursor of Mind. The fact is, Mind is the precursor of all Nature. Unconscious Nature after long evolution produces intelligence unconsciously. That is, Nature in developing intelligence is not, or originally was not, aware what it was doing. Nature's highest aim is to reflect itself, revert to itself, or become objective to itself. In order to do this it develops reason, or the type or phase of reason manifesting in man. This is the consumation of the process of returning to itself. The process is separated into three divisions: one is named fate, another Nature, and the third providence. Now it doth appear that one word can be substituted for three, to save time and space, and this word is Creator. Dissolution of the Absolute or dispersion into plurality is obscure. That is, the Absolute is divided into a multitude of objects. Then it is no longer the Absolute. But thoughts can be radiated from a primordial Mind forever without division or dispersion or any distribution of the original Mind. Roughly symbolized in the perpetual magnetization of innumerable steels by one magnet without a trace of loss of original force. Division of the Absolute is the extreme limit of illusion, delusion and absurdity. The sending of a mentoid, thought-form or body is less complex, than the division of the Absolute and transmission of the separate parts. This process would be comparable to the extreme absurdity of cutting out a portion of one's brain and expressing it instead of a thought. Since human reason appeared on earth, no combination of four words has equaled "dissolution of the Absolute" in vacuity and inanity. The expression "eternal proceeding" is the height of wisdom if it is agreed to that thoughts eternally proceed. What can proceed forever unless it be thought? The idea that all

thoughts ever sent forth may be recalled to the original source has been widely prevalent. If recalled then structural matter would be dissolved into primeval electrons. Numbers of very ancient philosophical systems have advocated the appearance and disappearance of stellar structures, and their regular building and dissolution in cycles. This is reasonable in comparison with the vapid idea, of division of the Absolute itself?

Sidereal Universes may come and go, but the Absolute, that is, Eternal Mind is forever supreme—one indivisible unit. And an infinite number of thoughts can be sent forth into space without a trace of loss, and without even a suggestion of dissolution, or division. The doctrine that all visible Nature is temporary, that all things or objects appear and vanish has ever been held by some philosophy; and is fascinating. The living and dying of all Nature in her visible forms serve only to render the Master Mind all the more majestic and sublime, omnipotent and supreme.

Hegel founded his system on the action of Mind and came near ascribing a mental base to the Universe. And doubtless he would have done so had he been aware of the existence of electrons, as fine, minute and impalpable as any Mind units ever conceived of by both ancient and modern theorists. The sentence: "Origin of species one from another" to me is almost without meaning. Species have appeared by a succession of steps like a line formed of separated dots.

MUTATION

The words evolution, devolution and mutation are as completely indefinable and unthinkable as the word create. But the word create fills a demand in the phase of Mind functioning as the human mind. Everybody is now supposed to endorse the various hypotheses of evolution or mutation. But these imply the existence of an evolutor or mutator with an intensity as great as does the word create a Creator. If evolution and mutation exist they had a beginning, although we cannot even think the full meaning of the word beginning. Things did not create nor evolve themselves. The question who created the Creator is totally without meaning within all limits of human mentation as it now functions. The word Creator is the set limit the boundary of human thought. A crystal does not form itself: electrons form it, having been

directed by a director—entirely mental. They build it under manipulation of a builder, purely mental. And this because it requires a high type of Mind to understand a crystal, its geometry, namely a mathematical type or phase of Mind. The subject of electrons is universal and inclusive of all within range of the five senses of a human being. The Mental Universe is more magnificent than the material. Nothing exists but electrons. They are used by Mind in the making, forming, building, integrating, disintegrating, evolving and mutating matter in all of its innumerable conditions, states kinds, varieties and properties. They were created by Mind. An astonishing thought is: the Creator having created electrons now appears to be experimenting with them, in new and endless combinations. Primordial Mind itself seems to be mutating. Progression is the apparent object of Mind original, each succeeding product being a slightly higher order than the preceding. Then recurring series appear and primitive types are again used in renewed trials. The word absolute may be dropped from human speech, unless it is used in mathematics. The higher sicence of numbers is absolute, but with this absoluteness,it could not appear until forms were created to be counted and numbered. Creation therefore is of a greater antiquity than evolution; and behold this: older than mathematics. But mathematics in the abstract in pure Mind existed before things to be numbered. This is inevitable and cannot be upset, nor reasoned away, nor crushed by sophistry. Evolution of course could not have set in until electrons had been created. Nor motion. Mind functioning in the human phase cannot account for the creation of electrons; and I have published a hundred times the reason why and here again: Mind in the human manifestation cannot discover its own origin, or what it is, nor even think of itself. How then find how the one great Master Mind created electrons? The meaning of the word Mind is unknown; likewise the word Creator; the two are identical, but cannot be completely understood by that part of universal wisdom named human. The word monism should forever give way to the word dualism. Two entities only exist. Mind and electrons. Electrons were created: all other entities have been formed. It matters not whether the words evolved, mutated, made, composed or assembled be used. Chemistry and biology may strive to their heart's content to discover how assembling is wrought: and

it is to be hoped that they will succeed. We are now drawing near to the wonderful, abstract, very ancient and familiar words, positive and negative. Two negative electrons cannot form the most primitive atom of matter; nor two positive. This writing is a mere restatement of the "riddle of the Universe." The insoluble riddle until the fractions of Mind now manifesting in the brain of man become expanded from latency into higher nascency. These things must be done: discover how two or more electrons began to revolve and thus exist as the first atom of matter. Then find how other combinations of revolving electrons were formed into other atoms of all chemical elements. Next find how atoms were formed into elemental molecules; these into masses, and these into the entire sidereal universe and its multiplex contents. How the electrons came to be is unknowable to the set of mental faculties now assembled as one complete human mentality; I mean those now expressing, not the latent units awaiting their coming summons into activity. Millikan, of the University of Chicago, has isolated one electron apparently, at least, he separated one from others and immersed it in a minute globule of oil. He seems to have discovered the mass and potential of one electron, one primordial unit of the Universe. Mass is a basic property of matter, but mass expressed as inertia is a property of electrons, and they are electrical units. Here is a strange expression: electrons are so small that Mind manifesting in human characteristics cannot think of how minute they are; rejecting the word "of." Mind cannot think minute electrons, or electrons. This comes to the verge of saying that the human mind is a flux, surge and flow of electrons. The idea that the mind in man is a form or mode of motion is where our good Aryan friend, Badarayana, closed Vedanta as a finished product over by the Ganges in full view of that colossal range, the Himalayas. That is, this ancient philosopher if now on earth would not even be surprised were he told of the discovery of electrons. Likely he would call them mentoids, and not bother with the word electricity.

Thus the space-sea of electrons, may have been in existence during eons before any two approached near enough to each other to evolve or form one atom. The formation of one atom was all that was required to "begin" the sidereal universe and all within, including man and the man of Mind. This word "of" is coming in here in a troublesome way—should be

really Mind-man. But now this question of radio-activity is here—here for long—lately discovered. All matter is disintegrating, flying away in particles of electronic dimensions. In time, all matter may go back to electrons. If so, it will make true a statement of the ancient Hindu Bhagavad Gita, thus: "All matter is invisible in its primal state; visible in its intermediate, and invisible in its final state." These rounds are cyclic, and our good friends, the Aryans, tell us that one of these little cycles requires 4,320,000,000 years.

A speculation of course, but a valuable mentological fact illuminating the property of the human mind named intuition. Thus radiation of electrons away from radium was dimly sensed by the primitive Aryans on their arrival in Northern India, having emerged from the rock strewn passes in the Himalayas.

NASCENCY

The word **nascent** is one of the most remarkable in the entire speech of man. The reader would do well to devote one day to the task of searching out its roots in classic languages and then apply their wealth of meaning to modern electrical science. It really means being born—beginning to exist. This word is basic, prehistoric, profound, deep in human personality. A mighty brain, a poet of the Vedic hymns, all overcome, submerged and overwhelmed by approach to the Creator; the inspired writer that he was, could go no farther, so he wrote: "In the beginning there arose the source of golden light. He was the only born lord of all that is."—**Rig Veda,** chapter X.

All gods and lords were born in the primitive bibles of man. Had the early Vedantists been aware that electrons are continually being born, that is, becoming nascent, active and inconceivably powerful they would have said the Creator is continuously expressing or manifesting as matter appearing. There is no death—no stasis. Electrons uniting with an even number of others, become positive. Here is the mystery; they act—this is, leave a positive or inactive combination, become negative, nascent and intensely active. The idea of the gods of antiquity being born is identical with the modern concept of electrons being born nascent.

I fully believe this assertion to be true, that primeval intuition of man (at least, of those who created the roots of human

language) were not in error. Hindu, Hebrew Mesopotamian, Egyptian and Aztec bibles mention light as energy or force. The Hebrew makes it the primal force, or, at least, the first to appear within realms of human sensation. Man is a local mentality, but a portion of the universal Mind. Mind, therefore, is a flow of nascent electrons—a constant birth. Memory is a fixation of electrons. Neurons are congeries of electrons in the brain. So are primordial mentoids in space; also in time, which is a succession of events. The mighty brains of Kapila, Patangali, Aristotle, Plato, Newton and Kant had no intimations of the unspeakable complexity of existing things. They thought atoms to be smooth spheres, but they are labyrinths of helices, spirals, whirls, electric circuits, elastic springs and tumults of electrons, moving with specific speeds far and away beyond all imagination. The unseen is so far greater than the seen that the latter may be almost ignored. Imagine the unseen to be as a sea of melted metal; then all matter is comparable to mere dross on the pure and placid surface. The seat of creative or building power is within original Mind directing its own created impalpable electrons into innumerable forms.

Vendanta, founded by Badarayana; Samkhya, by Kapila; Yogi, by Patangali; Purva Mimamsa, by Gainini; Vaiseshika, by Kanada, and Nyaya by Gotama—these six mighty systems of abstract, abtruse and very ancient Aryan Hindu philosophy, it has ever been thought, sounded the very deeps of human wisdom regarding the Creator. The Vedas, Sutras, Bhagavad Gita, and the Puranas, elaborated by centuries of intense mental concentration by great philosophers, along the banks of the Jumna and Ganges, for long seemed to have explored all labyrinths of Mind functioning in the human phase, leading near to or within creative power. The Avesta and Vendidad, in Iran, let fall sounders into speculative depths searching for the Creator.

The banks of the Euphrates, Tigris, Jordan, Nile, Orontes, Po and Tiber, were the silent places of meditation of thinkers during many centuries—thinking of the Creator. Pythagoras, Plato, Zeno, Epictitus, Socrates, Pliny, Seneca, Hegel, Spinoza, Kant, Newton, Stuart, Berkeley, Hume, Paine, and a hundred others, studied, thought—taxed their Minds to the limit in the interminable search after a clew, hint or suggestion as to the real nature or attributes of the Creator and Builder

Alvan Clarke & Sons' Equatorial Telescope—In the Lowe Observatory; focal length, 22 feet; diameter object glasses, 16 inches. It is fitted with a Brashear telespectroscope and plate-holder.

of the Universe. More than one hundred philosophical systems were the products of these wonderful and long-continued series of arduous mentation. None of these found the Creator. Nor has any one of the world's fifty-three bibles cleared the horizon.

The Rig Veda contains nearly one thousand hymns, called Mantras—meaning born of Mind. The early Hindus sought the Creator by sheer force of Mind, by powerful mental concentration. This was because they believed that their minds were sparks from the Infinite Mind—integral parts—and from this they endeavored during thirty centuries to find the whole —the universal, primordial sea of Mind. Many minds of antiquity became convinced that they had discovered the Creator, or at least had drawn very near to the central, or if one pleases, within widely diffused, creative power.

The word immanency appeared in classic philosophy, existed during a few decades of centuries, died out, but it is now being revived and is appearing in all parts of the world. Beyond all doubt, in the abstract mental way is a method of research of almost supreme power. At all events, it is by far the oldest of all plans.

MODERN METHODS OF RESEARCH

This new way starts from matter. The telescope, telespectroscope, the telecamera, sensitive plate, the storage of light and rescue of starry rays from cosmic deeps, the telebolometer, excessively sensitive to heat radiation; the microscope, the marvellous new ultra-violet light microscope, the retort and qualitative analysis of matter, the high vacuua securing nearly total absence of what we have named matter, and near approach to that long-sought point, absolute zero of temperature; all these, and a greater, the disintegration of all known phases of matter, elemental matter into primordial ultimates, electrons, and these entirely of electricity, all have conspired to place man on what was thought to be a new road leading to the Creator. Work reigned in observatories, in laboratories and scientific-research rooms. The new way led along beside still waters. Science became micro-voyant in search for relational facts. As it were, pointed, penetrating thoughts were evolved, and they came near looking into the interiors of atoms. Purposive power was detected, a primeval

force beyond all existing matter forms. These are doubtless thought forms. Metals were alive, high potential electricity in Crooke's high vacuum bulbs tore matter into electrons, and these are fine as "thought stuff." Mentation became profound, and thoughts deduced from experimental research into the properties and laws of matter were joined to those born of abstract contemplation.

The results reached by pushing the use of the trans-violet-energy microscope to extreme limits of wave lengths, were that universes exist within universes. And this: life glows in beings of molecular dimensions. These living, moving creatures, are made of atoms. And from another line of exploration, these atoms are combines of electrons. Billions of hitherto unknown organisms were rescued from oblivion—from the colossal realm of the unseen into the seen—into range of human vision. Then these moving beings were photographed, placed in micro-projection mechanism and thrown upon a screen where all could see them in rapid motion—in intense activity. Each animalcule is a center of Mind. They know.

Researchers in Europe and America compared results, when it was found that they were immersed in more active mentation than were Badarayana, Kapila, Gainini and Kanada. The sages of the Himalayas, Moriah and Olympus, did not think with any such intensity. They could not without looking into the trans-red and trans-violet regions of the spectrum in powerful spectroscopes; nor into hosts and billions of living creatures in microscopes using trans-violet radiance. Nor into galactic deeps in the telescope. The discovery is this: the kinds of mentation in the minds of Gotama and J. J. Thomson —the one looking at nothing in deep abstraction, and the other at matter vanishing through solid walls as electrons; the one on the Ganges and the other on the Thames—India and England, are identical, differing only in intensity, modern mental action being the most rapid. Both methods arrive at this one supreme truth, the Creator is mental.

Since Hugo de Vries with his mutations has not aided Ernst Haeckel in any way whatever in solving the Riddle of the Universe, that long-sought and auspicious moment—the time for transforming equations has arrived, and a general rearranging of the order of the terms. A wilderness of new coefficients must be introduced, succeeding and supplementary to

Lamarck, Darwin, De Vries, Hegel, Leibnitz. Cells never evolve into other kinds. Mutation surely leaves room for the action of Mind in between any two consecutive things. One way of imagining in day or electric light is to open a dictionary or lexicon, read down a column of words, and then go into solitary places and imagine in silent darkness. Thus, by doing this, the word "monad" was annihilated for ever from the literature of metaphysics. And Leibnitz would now erase "monad" were he back here on earth. Look down a column headed O in a Greek lexicon, come to oid, and see its meaning. It means form in English. See the next word below —oida, and the astounding fact stands out, oida means "I know." But oida can be translated body. Idea, Greek, in English becomes form, shape, appearance, model, idea, mode, aspect, from idein, to see. But only a form, entity or body can be seen, either visually or mentally. Then phrenoid is a legitimate Greek word, although not in the lexicon. And mentoids, Latin and Greek combined, both meaning thought or mind-bodies or forms. Now, I assert that these mind-bodies are mental messengers directed by a mental director. They are builders and formers directed by a mental builder or mental former. They were created by a mental Creator—by the Creator, by Mind creative and primordial, by Mind.

Matter is Greek, hyle, and form, morphe. The idea that form could precede matter was not taught by Aristotle. Immaterial form was unknown to him. A mathematical form likewise an immaterial concept, though powerful in the extreme, since it is able to weigh the Universe, and tell the distances of the stars.

Ernst Haeckel's world-ether becomes space-electrons. They do not create, they were created, and then used by directivity in forming the primitive elements of matter. The theory advanced of "idea-forces" approaches quite near to the doctrine of space-traversing mentoids. This theory, born in France, is ideal evolutionism, and good, for it admits the action of Mind in the building of the stellar Universe and its enclosures. I do not know if this presence of Mind in Nature was advocated in fear and trembling; or put forth with caution for fear of attack.

Self synthesis cannot exist in the Universe. This hypothetical coalescence, assembling, joining together is nothing but the ancient error, activity. Automatic synthesis excludes

directivity and has no place in any Mind theory of the cosmos, and is an insiduous, sinister, and dangerous doctrine. "Extension of movement" extends in all that quantity of electrons assembled. The expression: "integration of matter," should be preceded by the sentence or phrase integration of electrons into matter. Disintegration of matter back into original electrons is now daily accomplished in physical laboratories in Crooke's vacuum bulbs. And Nature does the same with disruption of radium salts.

GREEK PHILOSOPHY

The central teaching of Plato was that Mind is not only far more exalted than body, but existed before it. Mind not merely exists as or in the Creator; but in all objects. Mind original clothed itself with a material body as the Universe of things; and Mind in suns, moons and stars existed before the material forms in which they afterward manifested. This is the theory laid down in the Timæus.

The platonic "immutable ideas" is refined and beautiful: that is, there are absolute ideals, truths incapable of change. And another is that Mind is not a compound, hence cannot be separated or dissolved, into elements. All matter can be resolved by the hand of man back into electrons by means of high pressure electricity, but Mind has no elements assembled into a combination. Mind with Plato is the originator of life. Mind is the only reality in existence; for matter comes and goes, is assembled and separated. Mind causes men to move, and it also causes worlds to move. The Creator is a person with Plato and perfect; and does not mutate. The Creator of the Universe by the establishment of order and law in chaotic matter. This should be laws of atoms in the sphere of created electrons. No cause resides in matter. Now the expression is: No cause resides in electrons, it exists outside and directs them. The changeless ideas of Plato, are what in this book are called phrenoids or mentoids. And the words models, patterns, plans are used because there are no others. And they are all immaterial, and mental.

"Therefore, that only which moves itself, since it does not quit itself, never ceases to be moved, but is also the source and beginning of motion to all other things that are moved. But a beginning is uncreate; for everything that is created

must necessarily be created from a beginning; but a beginning itself, from nothing whatever; for if a beginning were created from anything, it would not be a beginning. Since, then, it is uncreate, it must also, of necessity, be indestructible; for, should a beginning perish, it could neither itself be ever created from anything, nor anything else from it, since all things must be created from a beginning. Thus, then, the beginning of motion is that which moves itself; and this can neither perish nor be created." Phædrus, p. 352. This masterpiece has never been upset; nor can it be. That which moves itself, is surely the only Eternal, the Prime Mover. the beginning of motion to all other things that are moved.

Arcesilaus, the Greek, founded a new academy, after Plato. He denied that doctrine of the Stoics, "convincing conception," saying that from its nature it was incomprehensible and contradictory. He does not state whence came the conceptions whether in from afar, or within his own personality; whether impressed on the mentality from some impulse within or by an exterior mental force. This philosopher could never make up his mind, taught the rejection of all dogmatic decision, and held that we must decide and judge on the grounds of probability. This has its modern echo in "we are creatures of circumstances"; and "life is a series of happenings."

Aristotle, the Greek, 384-322 B. C., "the strongest of the ancients," "the master of those that know"; who "aspired to that cultivation of universal knowledge for its own sake, in which he attained a distinction without parallel in the history of the human race," actually taught the utterly fallacious theory of activity. And his Philosophy Prima has influenced thought during twenty-two centuries, together with the Organon and other refined "esoteric" and "exoteric" lines of philosophic reasoning and purely metaphysical speculation. Indeed, it is strange that one who discovered the laws of deduction under which Mind acts, should have been lured by the wiles of activity. His deductive reasoning became conscious of itself; and in all of his studies in logic. Could Aristotle have had the bolometer, telespectroscope and telespectrograph, the telecamera, the micrometer, microscope, polariscope, induction coil, rheostat, thermograph, barometer and electric circuit, he no doubt would have laid down laws now at the base of modern astronomy, physics, electricity and chemistry. He had none of these and depended on pure action of Mind for all

of his long historic deductions. Thus: "A, B, and C draw iron; A, B, and C represent all magnets; therefore all magnets draw iron." Aristotle could not prove that three magnets represented all others; but it is true; and magnets can maintain the drawing process forever, so far as science is now able to perceive, without a loss of force. Could this Greek mentonomist have known this remarkable fact, doubtless he would have established a far different system. With the telescope and mathematics he would not have placed the earth in the center of the structure of planets and stars. And could one glimpse of the fact of existence of electrons have flashed into the Mind functioning in the brain of Aristotle, the scientific career of man from that auspicious moment unitl the appearance of Kant, would have been diametrically opposite to what it has been. His "Unmoved First Mover" and the "Evermoved," the evermoved being the celestial vault, would have become Creator and the original quantity of electrons. His generation and destruction, hot, cold, wet, dry, air, water, earth, pairs of opposites, active and passive, primal fire, all and more would have resolved into Creator and electrons. His long search for "substance" would have ended in the ocean of electrons. It is a sad fact in philosophy that he did not give due consideration to the views of great men before his time, notably in his writings against his great precursor, Plato, B. C. 429-347.

He antagonized the basic element of universal knowledge, namely, the basic teaching of Plato, in his everlasting theory of Ideas, for Plato's theory of "forms" and "ideas" is that they are real, being derived from the action of Mind. Thus the "greatest philosopher" denied the foundation of all real and true philosophy. Aristotle's theory of sensible material particles, each unlike, but having within the power of change or change of direction or rate of motion, is rank activity, and is here dismissed without argument. For electrons are precisely alike. Aristotle's geometrical forms, and numerical entities, that is, numbers, 1, 2, 3, 4 to infinity could ever be reasoned upon apart from matter, but incapable of existing outside of matter. This is the limit. How could geometrical forms and figures be reasoned upon apart from matter if they could not exist apart? The cardinal truth, enduring as adamant, is these forms so familiar to geometers can and do exist outside of matter. And they existed in Mind before the formation of

matter from electrons. And in fact, matter could not have been formed even into atoms without preceding thought-forms. This because atoms possess forms and as many as there are chemical elements—phases of matter. Circles, squares, triangles, rhombs, trapezoids expressed in matter could not be without antecedent symbols or patterns in Mind. To me, this is so completely self-evident that to merely state it is to proclaim its truth.

The idealism taught by Plato reduced all to Ideas in the annihilation of matter, motion and variation. Aristotle, to avoid this hypothetical resolution of all matter to ideas (thought-forms), invented "potential" Thus at a time potential did not exist because it possessed no properties. Then it changed and became real, energy came into existence. But this appearance of energy could not occur without preceding potential. The Universe of Aristotle is continuous like an ink line, the first end is pure potential—matter without form or qualities; at the other end is pure unconditioned actuality, the ever existent, for all such terms, actuality, conditioned, existent, reality, I substitute the word Creator. I would change this sentence to read: The Universe is subject to formation, evolution, mutation and dissolution. The first end was the colossal sea of electrons, without form or qualities belonging to electrons; at the other end is unconditioned electrons, the not ever existent, but the first creations of the Creator. Before electrons Mind, then electrons, next the Universe, and after its dissolution as such, electrons, and if they are annihilated—Mind. For "potential" the word Mind is here written. Aristotle must have heard of Hindu philosophy, as he conceives of—(the Creator) absorbed in self-meditation. This is pure Aryan. Man does not fall within the sphere of Nature, he is somewhat superior, and by means of reason has direct connection with the eternal. Should read Mind in man is an integral part of the Original Mind, the Creator.

THE CREATOR THE CREATIVE MIND

The beginning is uncreate, then electrons were not the beginning of all that exists; they were created. Then Mind is uncreated. Electrons are the beginning of created substance, whence matter was formed. True, everything created must be inevitably created from a beginning, from no thing. The

only entity filling this condition is Mind. Mind functioning in man is so constituted that it cannot think of a word to substitute here for the word Mind. Then by inexorable logic, not open to attack anywhere, Mind is the Creator. And no word in any language can be used in place of the word Creator. Mind within the mortal frame of man cannot even commence to think of any other word than Creator; nor sense any other Creator not Mind. This is inherent, the beginning, middle and end of all argument. And all thunders of false logic cannot prevail against it, nor pseudo rhetoric nor sophistry. Plato must certainly have believed in directivity. At all events, he believed in the existence of a Creator: "It is a difficult thing to discover the nature of the Creator of the Universe, and being discovered, it is impossible, and would even be impious to expose the discovery to vulgar understanding," said Plato. And Plato actually believed the Creator to be intelligent, for Phædo reads, p. 117: "But, having once heard a person reading from a book, written as he said, by Anaxagoras, and which said that it is intelligence that sets in order, and is the cause of all things, I was delighted with this cause, and it appeared to me in a manner to be well that intelligence should be the cause of all things, and I considered with myself, if this is so, that the regulating intelligence orders all things, and disposes each in such a way as will be best for it." From this it is clear that two of the world's greatest philosophers adopted the theory that the Creator is intelligent. But intelligence is Mind. The chief tenet of Plato, one so high that it is an order of itself is that of inherent innate ideas—noemata. To these ideas the name given by him the eternal (paradeigmata), were types and models of all things, and to the (archai) or principles of our knowledge we refer the infinite variety of individual objects presented to us." Now these innate ideas in the Mind functioning in the human phase are known to be thought-forms. Thus, it is impossible to think without thinking of a form, or still more refined, thinking a form or model. Then the Creator thinks in forms, or forms. Then there is only one kind of Mind in existence: omit the word kind, and there remains one Mind. The reader may think that there is more than one kind, type or action of Mind. Take the multiplication table in arithmetic; there is only one way of learning it. Of all the billions of human beings that ever lived

they all, if striving to memorize this table had to use the same mentation. So of all mathematics from addition to quaternions. So of all things within the entire range of thought. Then the Creative Mind is of precisely the same nature in producing equations, as that residing in those who solve them. Then only One Mind exists. This is divided into an infinite number of parts, and a number of these manifest in the brain cells of man. This is Hindu philosophy and existed long before Plato and Anaxagoras.

But a thought-form is a phrenoid or mentoid. A quadrilateral or pentagon in space composed of the traditional lines without thickness is a thought-form a mentoid. So is the thought-form of a human being, or amœba in the original Mind. Creative Mind—Mind. For if Plato were here now, beyond all doubt, he would say: "Electrons are the correct entities to be developed into form by mentoids." Of course he, the mighty Greek, would say phrenoids.

In the dialogue, the singular question is asked: "Friends, do you doubt how that which is called learning is reminescence?" Phædo, p. 85. This sentence is remarkable; for how does one learn by reminescence? How learn algebra by means of reminescence? Re, again and mimini, remember. Of course Plato did not mean this: the mystery of former existence in some way was manifesting in his mind. This subject will not be discussed in this book, "The Mind Maze."

THE STANDING MYSTERY OF WORDS

Pathy is direct from the Greek word pathos, derived from pathein, an inflection of pascho, suffer. To me, this derivation is filled with limitless wonders. Why base a word signifying thought-transference upon a root meaning to suffer, or suffering? Can it be that man suffered to make his wants, desires and longings known to others by Mind processes before the origin of words, of speech? Here is the full definition of the word telepathy given in the Standard Dictionary of the English language, Funk & Wagnalls Company; and all other definitions in this book are from the same source: "Telepathy, noun, the sympathetic affection of one Mind or person by another at a distance, through a supposed emotional influence and without any direct communication by the senses; thought-transference; telesthesia. Compare metapsychosis; mind-

reading. (Derived from Tele-and-pathy)." But pathy is derived from a root expressing human suffering, and this suffix, pathy, ends many important words. Suffix is derived from the Latin word suffixus, fix from suffigo, figo, fasten and sub, under or below. Thus suffering is under, beneath and below all things human, as revealed in humanity's own language. Then the first men suffered to speak: suffered mentally before they could speak: suffered to open communication with other Minds before they had a word. This is submitted to the reader as one of the most astonishing facts hovering around about Man. Pathos, pathetic, are words describing the mental state of one trying to speak to another, to communicate, and be unable to do so. Behold the deep mystery. It may be a clew which will lead to some remote, hidden and obscure gem—a mental diamond. The dictionary adds: see metaphsychosis: let us turn to that word, it may contain a hint or clew. "Metapsychosis, noun. The action of one mind or spirit upon another without interposition of any known physical agent. Greek: metapsychosis derived from meta, over, and psychosis. See psychosis." Dict. The Greek lexicon thus defines "psyche, the soul; life; reason, disposition, inclination, propensity, apetite, character, activity, life, a person; according to the Stoics, the sensitive, as well as rational, animating principle. From epsyche, perp. of psyche, to breathe. Psychosis, is also Greek for English butterfly. Psychosis.

THOUGHT LANGUAGE

Pathology. Any form of mental derangement: especially, derangement due to some disorder of the nervous system without discernable lesion of parts, as by irritation (without lesion) of the brain and spinal marrow; neurosis of the intellect: sometimes applied to mere mental idiosyncrasy.

Mentology and pathology. Any state of consciousness or tendency to such state, as distinguished from corresponding change in its physical basis. Psychosis, Greek, a giving life to, derived from psychoo, give life to, derived from psyche, and in Anglo Saxon, sawel, soul. The soul, or mind therefore was thought by the Greeks to be due to the breath, the breath of life. The word psychoplasm, noun. The physical basis of consciousness; the material medium from which the physical organism is evolved: a mystical term meaning a hypothetical

substance." Dict. But in these modern days this word psychoplasm is tremendous: for it fits in most admirably with the late concept that the entire Universe, whether finite or infinite, is rooted and grounded in a mental base.

For plasma Greek is derived from plasso—form: that is Mind forms all existing things. Indeed! in these researches we are reverting back to the Dorians, Ionians, Pelasgians and back from these to the pre-Sanskritic Aryans, they who emerged from trans-Himalayan uplands centuries before Epirus and the Peloponnesus were discovered. The roots of words are as filaments of pure gold, low descending. See this: path and pathway are both derived from this rock-hewn primordial word pathos, and this from the more ancient and distant word, pascho, suffer. The entire pathway of man during his long, devious and erratic career on earth is a way of suffering. And now all these conscious mysteries are concentrated in the current word telepath, telepathy—to convey our longings, our hopes, fears and sufferings to a distance. The leading intellects of the world ought to take up this thread of gold, leading and luring us along within the maze, and discover every law and by-law of thought-transference. For all that is in man, has been, or will be, is in the realm of thought, of Mind: not wrapped up, but expanded and transferred to others. So vast, so deep, so wide is the meaning and ramification of meaning into hidden chambers of the Mind—this wonderful word pathos, that its definition is given in full from the dictionary.

"Pathos: 1. Noun. The quality, attribute or element, in any form of representation or expression, that rouses emotion or passion, especially that which wakens the tender emotions as the feeling of compassion or sympathy; also, tender or sorrowful feeling. 2. In art, the quality of the contingent and evanescent phenomena of life, as the facts of personality, individuality, human passion or emotion, that the artist's conception embodies or concretely expresses; opposed to the qualityof the ideal." And it was indeed pathetic for early humans in the most remote epochs of the past, ill in the night, lost and alone in the forest deeps, or in trouble of any kind, in darkness, to try to speak, having no words. Articulate sounds made before the "quaternary," crystallized into roots of words. By studying and comparing these one with another, by races, tribes and kindreds, we can now peer into primordial types and phases of mentation. Thus the study of language is of

prime importance to mentalists. See along down the columns of a dictionary and be surprised at the great number of terror words, night words, exclamations of surprise, fear and horror before man knew how to use fire and strike a light. The entire career and civilization of mankind, language, law and religion would be vastly different from what they are now, if matches had been in use in primordial caves and jungles, along river banks and the ocean shore. The mystery of it all is, how did hair-covered creatures, with tusks, of which our incisor teeth are the remnants, living with cave-bears, the mammoth and mastodon in deep tangled wild woods, utter sounds which have survived as indestructible roots of words now in use in the highest society, in universities, and in high literature. This book is now being written for the purpose of speaking of primitive mysteries, and this without hope of solving them. The word pathos may have been coined by advanced Aryans; but it is based on pascho—suffer. The first Aryans must have suffered. In the Greek English lexicon, in a long definition of pascho, its derivatives and cognate words, there are these words and terms: to suffer, to be affected with, or experience joy or sorrow, good or bad fortune, to be affected toward another, to have love or affection, passion, antipathy, sympathy, and pity. Pas is the name a Greek infant called its father, derived from pao—to feed: and this root has been cut to form the English word pa. But then a in the earth's first forests was the cry of one calling for help; and a followed by the aspirate, rough breathing or our modern h, became ah, surprise, wondering, longing, wishing: while a, preceded by the breath or h sound, became ha! laughter. Thus: fears and tears, mirth and joy, these emotions of such wide, yet near difference depends on aspiration before or after wonderful a: Thus, pas, pao, father, feed, forms half of the word pascho, to suffer, precisely as if fathers suffered in primeval days to feed or secure food for their children. This ancient type and form of suffering, agony and solicitude, is intense and acute now among the poor. And it is rapidly increasing its pain. For no clew to the real nature of Mind can be had without tracing words to primeval roots. If man is eternal, so are his words. From this it appears that original thought is everlasting; for let man exist on earth indefinitely, and make continuous changes in forms of speech: let him modify as he

will: make countless inventions, think new thoughts, coin new words: then he forever will be unable to extinguish or destroy a primeval root pre-Sanskritic, Hamitic or Semetic.

EMANATION

The word emanation is from Latin e, out, and manare, to flow, and literally means to flow out. Then everything that flows out is derived from whatever is within. Call all within primary, then all issuing or flowing forth is secondary. This ancient hypothesis takes no account of a Creator, will or volition. Emanation may be compared to the flow of a spring or a fountain. A primeval source of flow is admitted; and this is changeless in quantity or attributes. Emanation teaches that the series is descending, the source of all is of high grade; but all that issues is lower in the scale. The original source, or entity does not enter the external world, only emanations from it. The Sanscrit, or ancient Aryan Hindu literature is a source of the theory of emanation, but passages are obscure, in meaning. All things from the first matter down to man is a descent. The expression "descent of man," can well be used in writing of emanation. The chief doctrine of emanation is that the primordial source is not diminished by processes of emanating. A magnet of steel can magnetize other steels forever without loss of power. Wisdom is an entity described as emanating from the original source; but wisdom is a Mind-word; showing that the ancients both Hindus, and other Aryans, down to Greeks conceived of Mind within primal things. The knowing ones, the Gnostics, taught the action of Mind in all their cosmic concepts. The term "throwing off" perpetually without loss or diminution was a tenet of the doctrine of emanation. A mighty primordial Unity is the source of all diversity, without any limit, at least minus limit in time. The first result of emanation is that: this mysterious entity thinks. The flowing continues: emanations emanate, and these likewise; but the scale is not one of progression to the higher but lower. Mindless matter is finally reached. But the original source thinks; or at least, the first emanation has the power of thinking. A phase of this theory is that the emanations from the primordial cause were created. They were created and then emanated. A refinement of this was that the act of proceeding or emanating

from was an act of creating. Then why does not this mystic theory of things handed down to us from remote antiquity correspond to the doctrine of mentoids, thought forms or bodies? The Hindus and Iranians, the Greeks and Latins, were not aware of the existence of electrons. Had they been, they might have imagined them to be at times assembled into thought bodies.

Some of the Greeks taught that emanations could not proceed one to another; but that all came separately and directly from the original source of all emanations whatever. Others compared emanations to rays of light, teaching that light emanates from its source without decreasing the original; not aware that the production of light calls for a supply of energy, manifesting as light radiation.

Leibnitz, with his derived monads, includes the theory of emanation; these emanated "moment by moment," from the great original monad. The expression created and derived monads, may be changed to created electrons, and their subsequent assembling into atoms and molecules, always preceded by mental forms of these atoms and later molecules. Emanation held sway over many penetrating minds during many centuries, but finally gave way to the theory of evolution.

This eternal outflowing has fascinated many philosophic minds; and given rise to a large and elaborate branch of the world's speculative literature. Its influence is small now, and ever waning.

MENTONOMY THE HIGHEST SCIENCE

It is well for a scientific man to be all wrapped in his favorite science; so thoroughly absorbed that his science is pre-eminently the fundamental and all others mere branches. To an enthusiastic astronomer, his science is the most important of all, and the others are subsidiary. The electrician may think that the study of electricity, Nature's mysterious enigma is of transcendent importance not only in solving the "Riddle of the Universe," but in the work of human betterment. The biologist would then assert that the study of life and its properties in endeavor to discover its origin, is greater than all other studies combined. But then comes the mentonomist with the declaration that Mind is so far more magnificent than any other entity in existence; that the Science of

Mentonomy, the Law of the Mind, is the one and only study of supreme importance, beside which all others are insignificant branches only. All roads lead to Mind; all discoveries are to be valued entirely in their capacity of adding to knowledge of Mind. Since this is a book on Mentonomy, let Mind be the highest and reign on every page in regal majesty and power.

There is an air of mysticism around and about the very idea of studying one's own mind: the mystic personality appears before the researcher's mental vision and the student scarcely knows where to begin. Suppose that we desire to know the complete history of the United States; then we must study all history of its past, even to the discovery of America. Would we know of the present state of the Mind in man, we must explore its distant past, and search for its properties and powers backward to primitive times. If possible, as in the case of geology, find fossil thoughts; those discarded in the progression of the race for knowledge. Study infancy, youth, adolescence, maturity and old age of races and nations. Each Ethnic type, has a distinct mental personality. But a greater plan of research is to study individuals through all these phases. These processes are called retrospection, introspection, retrovision, revision, recall, analysis, recollection, and assembling. These are to live over again the past, and see again latent mental forms. Retrovision and introspection are indeed fascinating. Retrovision means: "looking, or the power of looking back, or especially a supposed power of seeing unknown events in the past." Supposed, only, no longer, it is now known to be true in the cases of certain types of Minds. The important question arises are thoughts recalled really unknown? May they not have long been latent merely?

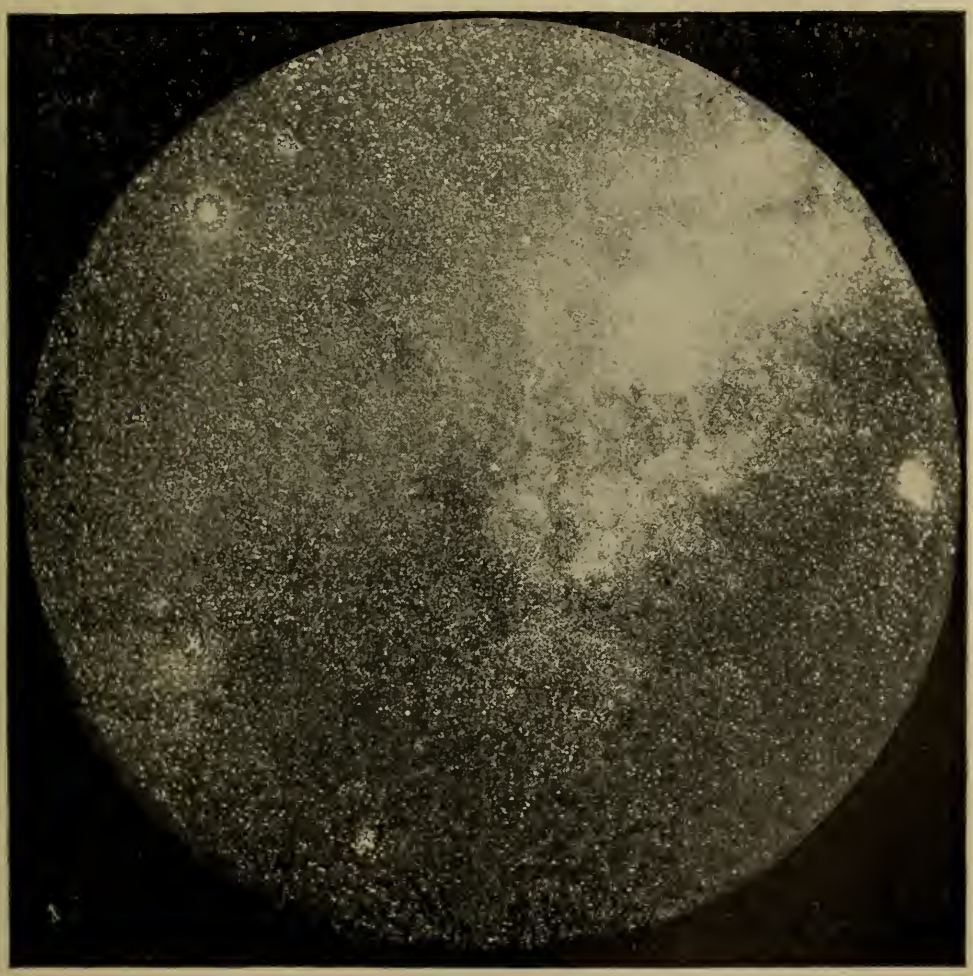
RETROVISION

Retrovision and revision, seeing forgotten scenes again, has for ages been the great insoluble problem of mentalists. So vast is this subject that the entire world wide and very ancient doctrine of reincarnation, the successive reappearance in different brains of the same Mind or mental personality, and hypotheses of subjective, subconscious, unconscious, and subliminal Minds are based upon the mysteries of retro- and re-vision. The word introspection means: "the act of looking

within; specifically, the act of observing and analyzing one's own thoughts and feelings or the contents of the consciousness." It is to look within, and is one of the most valuable attributes of the human phase of Mind. Also a beneficent mental exercise, one having great power for good, for discipline, and self culture. It ought to be engaged in by all who wish to make themselves better and be the more able to avoid mental errors and cast them out if they find lodgement within. It is to know thyself.

Memory from days of early childhood even to old age, is a remarkable fact in Mentonomy; scenes of long ago, will be more vivid than recent. Voluntary recall can be trained so that it will be possible to summon these apparently latent and slumbering mental impressions.

Retrovision is comparable to the sinking of a sounding line into the depths of the ocean. The very fountains of great mental deeps are opened and they pour forth floods of thought to be forgotten things. Actually, when re-vision is highly trained and nurtured, it seems at times as if one were in touch with another personality in the brain. Dual minds have been advocated by some mentalists, the theory being based upon this strong impression of a personality, one having stored or memorized what the other has failed to store—forgotten. The real foundation of the Mind in man lies in the unaccountable facts of retrovision, recall and introspection: for without these we would not be aware of this apparent other part of the self, or another personality within. Persons have been overheard when holding animated conversations with themselves; or with their own self, or with their "other mind," other half, or separate self. These are obscure terms and the hope is here expressed that they will be all traced out, analyzed and reduced to laws, to set and rigid laws of personality. Is there a hidden key to the perplexing question of the person? Surely retrovision is not governed by chance; nor is it a fortuitous and fugitive property of the Mind in humans, but a deep and permanent law. Retrovision and introspection appear to be exalted above ordinay memory, and advances in Mentology are due to move along these now obscure pathways leading and luring onward into mystical mental realms..



Rich Region in the Milky Way—In the Southern Constellation Sagittarius. Between 30,000 and 40,000 stars are impressed upon this negative—all huge suns. Each may be surrounded by inhabited worlds, like our star—the sun. Taken by Astronomer E. E. Barnard.

THE EMOTIONS

This vast subject cannot be approached by one having a glimpse of its magnitude without a feeling of awe. It is majestic, comprehensive and inspiring. Individuals, society, states, nations have been rocked by emotions; and this throughout all historic time. All wars are based more or less upon human emotions; and all religions. When emotions suddenly assume sway, dominion and power, all humans affected are tossed as restless waves of the sea, or rocked as a baby's cradle. Only one faculty, attribute or quality of the human mind approaches emotions in intensity and that is the gigantic power—mathematics. But the emotions are the stronger. Mathematics cannot toss, rend and heave a nation: Emotions can, and have, often. In the outset, recourse must be had to the all powerful and magic wand—language. Behold this: Emotion consists of the Latin e, out and moveo —move. This is simply astounding: Telepathy seems to be involved; for let one be set within some deep emotion; then others quickly become aware of the fact, and this in less time than to become cognizant of the fact that another person is in the midst of a line of reasoning. Emoveo is as completely mystifying in its origin among the Latins, or their predecessors, as is the mysterious word pathy. Moving out? Who, or what moves? What were the Aryans thinking when they made the everlasting word emoveo? Were they at the north base of the Himalayas, aware that an entity within man had power to move out, or send force, mental force, to a distance? Had they become aware in those early days of the existence of a person? Mentalists should explore every root of Aryan speech; and of every other race, for that matter. For incredibly important, fascinating and wonderful, is the history of the appearance of a word. But no history, not even of one archaic root word has been written, to this date, 1911. I have no hope whatever of being able to analyze that complex, human emotions. A skilled chemist, in a modern laboratory, having at hand the entire eight-eight, at present known elements, or phases of what we call matter, and armed with spectroscope, microscope, bolometer, and retort, has before him a task of kindergarten proportions when compared with the work of an analyst of the emotions. A kinetic personality at once appears before one who begins to explore. Since no

clew has been so far secured as to the nature of the human personality, it at once becomes necessary to watch with the earnestness of a detective lest a hint might appear and be lost before noticed. If one trace of the mode of action of one personality, one mentality upon another could be secured, it would no doubt lead into a corridor within the maze that possibly might open into another. A mentality in the brain thinks a word, and orders the vocal organs to speak it. Another mentality hears it, and thinks the same thought. How this is accomplished is totally unknown. But words have been thought and sent to the mentality of another without being spoken. And how this was done is of course utterly unknown. It stands out, therefore, as clear as day, that if the law of telepathy could be discovered spoken words would not be necessary. There are a number of excessively strange books in existence which teach in the most impressive terms and positive, that spoken words will some time die out, and thought-words take their places. All this depends upon the discovery of the law. Nothing can be done without. But the emotions are transferred in less time and with greater facility, than facts, logic and mathematics. This is also inexplicable. I have now been writing this article on the emotions during 32 minutes, and have not even touched the knob of the door of the first passage, or chamber within the Mind maze. No doubt the emotions are based and founded in consciousness, and form a large proportion of the structure of the self in man. This sentence is indeed obscure, for the strange word self appears. Obscurity deepens and casts shades, since nothing is known of self. The Aryan Hindu Vedanta is the best analyzer of the emotions. A lifetime could be filled with a study of this splendid system of philosophy. For great was Badarayana, its mighty founder. Enmeshed in flesh, the emotion named desire is the first to appear. It is the most archaic and primitive. And it is even conditioned by environment. The answer given by Nature to desire is either pleasure or pain. These three are the fundamentals. All else in human emotion is based on these deep set rocks of foundation. But see this: desire is Latin, de, from and sider, star. Can it be that the first men thought they could receive from the stars?

Twinkle, twinkle, little star;
How I wonder what you are.

It is well that modern children repeat these words, first spoken in fastnesses around and about the Himalayas. The basic word desire includes anticipation, longing, wishing, hope, expectancy, wanting, fondness, love, anxiety, yearning, coveting, ambition, zeal, ardor, needing, solicitude, eagerness, seeking, and other similar words. Desire is seated within Mind-deeps and is inextinguishable so long as Mind actuates brain. The extension and ramification of desire are complex beyond all hope of making explanation or analysis. It is the first emotion to rise above the wonderful and inexplicable horizon of consciousness. How discover the law of consciousness? Its dawn is in a microscopic bag or sack of glue filled with water, in which floats a still smaller nucleus. The ultra-microscope reveals everything in these nuclei, except that so long sought. —Life and Mind, or Mind and Life. Longing and hoping are Anglo-Saxon words. Anticipation is compounded of the Latin, ante, before and tapio, take, or anticipo. Thought is Mind sensing the coming or approach of fulfillment of desire. Expect is the Latin ex, out; and specio, see, and in the lexicon is view, look, sight, semblance, image, vision, or the apparition of something coming.

Anxiety is Latin anxius, ango—distress. Yearn is Anglo-Saxon for eager; while solicitation is Latin, from sollus, entire; and cieo, citus, excite. Thus the entire being is involved in desire. Ample proof could be given in the expansion of the innumerable meanings of the word love. To do this would fill a volume, for love includes the entire human. And hate is but the antithesis, the negation of love. Humanity centers and revolves around love. See this inexplicable mystery: love is a desire word; desire includes the Latin word desidero, de, from, and sidus, sider, star. But sideros is Greek for iron; the chief metal for attracting magnetism. Steel retains magnetism permanently; but steel is iron to which is added an infinitesimal quantity of carbon; and carbon is positively the most remarkable element known. It is the intimate associate with all life whether in plants or animals; it is seen glowing in the sun and stars, and blazing in diamonds. And diamonds are always involved in love episodes. Thus we have desire, stars, iron, magnetism, love, attraction, steel, carbon, diamonds in one cosmic-human circuit. Who are we? What do we really know of ourselves? There, that inexplicable word self, unconsciously appeared on this paper, sub- or super-con-

sciously. Surely we, the reader and I, are wandering and wondering within the depths of the Mind-Maze. For Emotion means to move out. We have moved out of our usual environment, and plunged into a labyrinth filled with obscure ways.

The object of writing this book is to discover laws of Mind. Archaic and ancient mysteries swing low. Protoplasm is the only living thing. It is composed of carbon, oxygen, hydrogen, nitrogen, and an excessively minute quantity of sulphur. Without doubt the sulphur is there for some purpose. The protoplasm could not be alive without it. But the Greek word for sulphur is theion, derived from Theos, Divinity, divine fire, the Creator. We are at the bottom of the lowest passageway and stand facing the sealed door of a room—closed apparently to Man. Iron in the stars glows in their spectra as displayed in the spectroscope, and carbon also, while hydrogen is seen in every direction amid stars sunk in space. The brain is composed of carbon and water; but back of all is protoplasm, mostly water when involved in tissue. But sulphur exists in brain. Electricity is a word derived from Greek, elektron, amber, because when rubbed it attracts all known substances, whence electrons, the absolute units of all existence. Brain is an electric machine. Doubtless gravitation is a phase of electricity.

The word awakened appears here; and by its presence opens the door to another limitless field for exploration. The word is not used here in the sense of being aroused from sleep, but from being latent, dormant, not apparent, yet really in existence, and having potency or capability of exercising formidable power, dominion and sway. Emotions are by far the most powerful forces so far known to act upon the human personality. I once awakened a latent swarm of bees, and fled to a place of safety. The emotion of rage dominated the angry thousands into fury. I saw a mob of men in a strike on a railway. Swaying emotions completely submerged reason. Discipline of the German army, that compact machine, could instantly be wiped out by emotions. The reason of nations, of millions, has often been eclipsed by emotions. It is astonishing to study the rapidity of outbursts of latent emotions. The number of human emotions is unknown. The area has not been surveyed, nor has any list or catalogue approaching completeness been made. This is because mental-

ists have as yet, scarcely commenced real analysis of Mind. For centuries, they have been confused, in thinking that man is more than Mind, Life and Body. He is not: he is a combination, temporarily of these three.

The reader will observe that all mental studies have not yet been advanced to the dignity of classification—to that of a fixed science with set formulas. This is because the nature of Mind is at present unknown.

No conjecture can be offered as to the probable length of time or amount of research that will be required to discover a clew to the nature of Mind.

ACTION OF MIND AT A DISTANCE

When we see any effect that evidently was caused by the action of Mind, we are sure of three things: Mind is in the effect: if not, immediately adjacent; or it acts from a distance. Since no entities exist whence matter is formed except electrons, Mind either exists within them, or immediately without, inconceivably near, or far away, it matters not how far. For electrons either know of themselves where and when to go, and how to work to build all structural matter; or are directed by Mind either near or afar. If Mind is within electrons they move by a process called activity: if without, they move and build by a process called directivity. Between the meanings of these two words there exists a gulf as wide as infinitude. No two words can be more unlike. For does the Master Mind exist within or without electrons? If Mind is within electrons—they possess infinite knowledge, wisdom, will and volition. For when this desire or will makes impulsion, matter appears in space. If this primeval impulse originates from within, the act implies the existence of an actuator; if from without, a director. Since matter appears as a result the director must be outside of it. If the same result is due to an actuator, then the actuator is within the resulting matter. Then steel and stone contain Mind. The position taken in this book, is that Mind directs from without electrons, forever from the outside, and directs that they shall assemble and form matter everywhere in cosmic space.

A clew seems to be within the grasp of man, and my argument is here restated: electrons in the act of building an atom, either know, from within, how to build—which is activity—

or are directed by external knowledge—directivity. But activity, directivity, know, knowing, knowledge, are mentological terms. Roots of human speech are as a diamond mine in these studies. Take the word intelligence for an instance, and search out its roots. Thus, Latin, intelligen[t] [s], ppr. of "intelligo," perceive, derived from "inter" and "lego," choose. Thus electrons actually possess power of choice; for when nascent, that is, at work building atoms, they choose, select, accept and reject. For an electron on its way to build one atom of mercury will reject and repel one on its way to build an atom of oxygen or carbon. But select, reject, choose, repel, repulse, are all mentological words. The word build is mental; and how can building be done without knowing how to rear a structure? or being directed by an immanent director?

It seems to be much more nearly true and reasonable to say that Mind resides in the exterior of electrons than within. For if without, this directive Mind is immediately adjacent to them. This is far less intricate and involved than to say, dwell within. There! I have unconsciously inserted the word dwell. This is a living word. If allowed to stand here, then Vedanta is admitted, with its venerable assertion that all matter is alive. Everybody admits that creative force is alive—living. To say that Mind exists within electrons does not help in any kind of solution, for it had first to enter. But enter is a verb implying motion or activity. To say that electrons are broken up into smaller particles is to involve all these researches into inextricable confusion; for the only alternative is to assert that there are different kinds of electrons. But the original hypothesis was that there exists only one kind of electrons, and that nothing beside is in existence. Thus an atom of copper and one of titanium, or of sulphur, differ only in the number and direction of revolutions and specific speeds of their component electrons. This is the theory of all atoms, and of molecules.

SPACE FLIGHT OF A NORMAL MIND BEING

Suppose that a personality functioning as human (that is, existing in a human brain and body) be endowed with the known five senses in perfection and transported through space containing nothing but inert—that is, not nascent or working electrons. Then the enclosed Mind or personality would be

unaware of the existence of the infinite ocean of electrons. After traversing space in all directions, during many millions of years, let the eye finally be effected—that is, see light. The words directions, years and see, have no place here, but there are no others. Light enables the brain to see, really. But at all events, our space-wanderer would think that matter had appeared. For electrons are invisible unless functioning as matter or striking other matter. A stream of electrons making impact on the platinum terminals in a Crooke's vacuum tube at once heat the metal to whiteness and light appears. Should the man moving in electronic saturated space feel heat, he would at once say that matter had emerged in being—into existence. Likewise, through the avenue of approach to the brain, hearing, smelling and tasting, any sensation or impression received would be referred to the sudden formation of matter.

The process by means of which electrons was formed in space is here called creation. I cannot think of any other word. The process is mental; for there is no other word that can be employed. The object of writing these articles as stated previously, is to reason up to the inevitable existence of a Mental Creative Power—the base of Nature in the space-sea of electrons. Then electrons become dynamids, mentoids, or plasmoids, created protoplasm, the only organic substance.

To assert that matter is eternal is as obscure as to say it was created. Mind now making expression in the phase named human, and in its present condition, evolution or rate of change, cannot think of the meaning of the word eternal, because the word implies without beginning, and the Mind functioning in the existing state of the brain of man is unable to think of the import of the word beginning. Neither is it powerful enough to begin thinking of the meaning of the word create. And it is hopeless to try even to think of the meaning of the word matter. Both may yet be encompassed by latent Mind units.

The electronic concept of the base of matter, a doctrine only ten years of age, is now itself so complex that its founders and advocates are submerged by its wilderness of intricacies.

I visited the magnificent session of the International Union for Co-operation in Solar Research, held on August 29 to September 3, 1910, in the Mount Wilson Solar Observatory, and saw one hundred carefully selected human beings from all

civilized nations. From early youth these men have all lived in the supernal heights of mathematics; their minds are trained with a severity and discipline more rigid than that of an army. Their mental powers are so great that others not exalted mathematicians and physicists, cannot think their thoughts, yet not on of these minds is able to think of a molecule, it is so inconceivably minute. More nearly hopeless it is to try to think of an atom, and still nearer impossible to think of an atom of hydrogen, the smallest and lightest body known until 1899. Then electrons revealed their existence to great physicists and searchers in electricity. An atom of hydrogen is 1,700 times more massive than an electron. Here is difficulty again, for it is not known whether mass is the proper word to insert. Inertia may really be the true word.

TELEPATHY

Mind expressing in the human brain is now known to be able to act on Mind at a distance. No proofs will be given here. Modern mentological literature, reports of societies for mental research; articles in magazines and papers, now being published in all parts of the world, are replete with attested and verified accounts of transmission of thought from personality to personality without material means. To these the reader is cited.

The action of Mind on Mind at a distance without any instrument will now be considered. And may the law of this phase of mentation be stumbled upon. A wide expanse in the mental world opens here: one worthy the attention of every student of Nature, whatever may be his special line of research. The study of this attribute or property of Mind, in search after its law, is of immense importance: for in this mental arena there exist possibilities for development and expansion so great that many other world problems shrink and subside away into insignificance beside it. If telepathic forces exist and can be controlled and sent in any direction, with power to act, then the law must be found at all cost: and students endowed with critical and comprehensive ability may well engage in this fascinating and withal, intricate study. In this book the assumption is made that telepathy is under the reign of unalterable law. No rational research can begin without first tracing words used, far and away back to their

origin: to find what they were thinking who coined a word. For an original word, a primordial root of human speech, is more inscrutable and majestic than a sun sunk in infinite deeps of cosmic space. Telepathy is formed of two words, tele, Greek, translated into English far. But the word pathy leads and lures into the very depths, for deep within the mental maze only may be found the obscure roots, fibers and filaments of this amazing word. When within the witching hour of midnight, I look into the eternal space through the telescope: far-seeing, or far-vision, I often think of the possibility of ever being able to far-think, to send thoughts afar, and to express or impress them as far as one can see in the great far-seeing instrument, up here on the mountain. Why may not a law of telepathy be discovered that will tell how to send thoughts to Mars, Jupiter, Venus or Saturn, even while looking at them; and enable the sender to impress these oscillations upon any minds there, if such exist and are able to receive?

MANIFESTING MIND

The finer forces of the Mind and finer conceptions when they come stealing over the consciousness all unawares at times, especially of repose, should ever be heeded and treated with all the courtesy and consideration due to an honored and beloved guest or friend. They come almost in the capacity of special messengers bringing telegrams, or a letter with special delivery stamp. They are direct from Mind depths; they summon to introspection and retrovision. Unless pressed by important business, these comings in should never be ignored, nor suppressed. This is a grievous wrong against ourselves. Have you an ideal never matured? Listen to the mental summons; go, obey. As well disobey a subpœna to court as one of these. They seem like the presence of another personality. Finer forces, they come to those able to heed and understand, to lure and lead along beautiful paths, and in pleasant places, through flowery lanes and beside still waters. They want you to introspect, revise, recall and renew. They are your latent, silent and ever true friends and monitors. Obey. Retrospection, when fully entered, and its labyrinths explored, awakens the impression that one's life, consciousness, objective mentation is sinking into some deep of Mind. The word merging perhaps is better than sinking.

One feels the Infinite. When the inexplicable higher forces are in dominion one senses the Master Mind. These are the highest flights of the human Mind when manifesting in a brain. They are as breathings over Eden. When introspection reveals absolutely new things, scenes, times and events, not known to the part of the Mind or personality that is introspecting and exploring the other; mysteries deepen. That is, the other part of the obscure self, has treasured something that made no impress upon the introspector. Positively this is no reflected entity, no reflex process: for reflection implies the existence of a reflector; as in the case of light from a mirror. Have we two sets of conjoined faculties? And these united by connecting fibers, filaments and tissues in the brain? So prominent are these facts, regarding latency of thought, and the awakening, that the ancients conceived the idea of reincarnation, the re-embodiment of conscious Mind, bringing with it a store of submerged memories, former impressions, fixed and set views and mental images up and out of the sea of existence. Would that the law governing all these wondrous things could be here and now discovered. Mind is not outside natural law; but is governed by itself. It is a law unto itself. Mind may be divided into two grand divisions, knowledge and wisdom. We may possess great knowledge and not know how to use it. We then lack wisdom. Wisdom in the Mind in man in entirely experimental, gained by processes of trial and error. This series has been named evolution. The present high state reached by man and the entire sidereal Universe and all it includes, is due in every minute detail to the familiar system of trials and mistakes. To these errors and mistakes the word evil has been applied as a name. The astonishing fact stands out, in the very nature of all things evil had to occur. At least, in all that part of Nature with which man has so far come in contact. Wisdom then is merely correlation and assembling of units of knowledge, all gained by actual trial and adoption or rejection. The art of writing stores up knowledge gained by this plan of trial and error. The expression of the poets: "The ideal becomes real" is true, but it may be worded in this way: the real is ideal. Suppose that a tree comes to an end as a tree; the idea or thought of the tree, or a tree, still exists. If not, there could be no more trees. Then the term could be all the more rationally rendered the ideal is the only reality.

If so, the structure of Nature, the complete Universe, is rooted and grounded in the ideal, in ideas, in Mind. See this: not in the Master Mind absolutely perfect until every trial has been made, and a set of facts secured, a set of trials which upon repetition do not reveal a trace of error. The balance sheet has not been prepared, for trial and error are observed on all sides, especially in the case of man. May not man after an incredible number of trials become perfect? The subjective side of Nature is mental, invisible, intangible, but real. Mind and matter are positive and negative sides of the same unit, the Universe. Before matter: Mind and electrons: before electrons: Mind.

EXPLORATIONS IN MIND

It is with humiliation that the ablest mentalists, men who have devoted many of the mature years of their lives to the study of Mind, must now admit that they know little about it. That is, of its properties. They know nothing about what it is, or its cause. Ignorance of these and of its true nature is supreme.

All, therefore, that these scientific students are able to do, is to study attributes and phases of the world's standing and perpetual mystery—Mind. And the deeper they delve into the subject, the more intricate and elaborate becomes the maze in which they find themselves. It has come to pass that they have almost stopped searching for the cause as being unknowable.

Men have found the limits of Mind in certain directions. Thus, human beings cannot find out how many times larger the circumference of a circle is than its diameter. The search was abandoned years ago, and the problem declared insoluble. And the ablest mathematicians, after a struggle of centuries. are unable to extract the square root of 2.

Mentalists are now, as it were, against a stone wall, a formidable barrier incapable of penetration—the analysis of Mind. Great mentalists, as in the case of mathematicians regarding circles, have not yet formally acknowledged defeat, but it is the opinion of the writer that they may as well. For, in all probability, it is beyond the power of man to find the cause of anything.

How thought is produced is unknown. No trace of information regarding the nature of thought has ever been discovered. None knows what it is. Hundreds of theories have been formulated, but not one has been demonstrated. The most prominent hypothesis at present is that thought is electricity.

It is now known that we cannot begin to think of the meaning of the words, beginning or end. This language seems strange, for we cannot begin to begin. Difficulty is encountered in the outset, or in the beginning. We are in a maze or labyrinth already. And you can think for a year if you want to and without result. Therefore, beginning is unknowable, and end likewise. For if there are such entities, then the word eternity must be dropped from languages.

It is hopeless for the reader to try to begin to think of eternity. He must fail; for to be eternal there has been no beginning and there can be no end. Thus in a few minutes we have found three words that may as well be out of the dictionary as in—beginning, end and eternity. Neither can be contained in Mind in man, for one destroys the other.

Infinity is another word that really does not affect our Minds. We may think that it does, but we are mistaken, for none is able to think about infinite space. Look closely into this matter. If space is infinite, it has no beginning or end—that is, it is without boundaries. For mark a bounding line, then the word infinity vanishes. And at once the Mind asks, what is outside of the limiting line? Man has no hope of any answer. And the mighty maze becomes more obscure, with ever-deepening plot.

We may "launch into the deep" as far as we please, but the excursion will be useless. No discovery can be made. And, to the dismay of mentalists, they have found that we cannot think of a cause, or rather of the meaning of the words "first cause."

If we make a powerful effort to think of any cause, the Mind tries to think of its cause, and again of another cause. It is known that thinking of causes of causes may be carried backward an infinitely long time without stopping.

Notice, now, that we are in a corridor of a side labyrinth, for there cannot be an infinite time in the past, because there must be time in the future also. This would imply two infinities, which cannot be.

Since it is utterly impossible to think of any kind of a cause, even one close by either our right hand or left, and whose

effects are seen with our own eyes, it is so hopeless to try to begin to think of a first cause that great logicians and mentalists no longer make the effort.

Take a highly disciplined Mind of any one of the world's great mathematicians, where one Mind contains more stored wisdom than one million other men's Minds, and watch what he does. He may let fall a sounding line into space year after year in search of solution of some mighty problem. He taxes his mental power to the extreme limit, retraces his steps and winds up the line. Before withdrawing in defeat he makes a mark similar to a figure 8 turned over on its side. All mathematical explorers agreed a long time since to thus mark the limit of their advance within the maze. This is to warn any other wanderer that it is no use to go farther in that direction.

The meaning of the sign is infinity, and the ablest Minds on earth stop short when they see this appalling character in any mathematical book. Only the superficial, the weak ones, even try to think of eternity, infinity, beginning, end, center or circumference, limits and boundaries or causes.

It is well, for those who make effort to think of these cannot even begin to think of the Mind of a mathematician. It is a sheer waste of time to try to center Mind on any of the transcendent subjects given above.

Great mentalists do not, for they are only too well aware that they are all unknowable. But note the conclusion reached here. Is it not wonderful indeed that there are perhaps two hundred Minds now on earth so powerful that the Minds of all the others, millions on millions, cannot even begin to think about them? Wonders pile up, for indeed Mind may be the highest of all. If so, it cannot be a result, mere product of any physical, any kind of organic activity. True, the nature of Mind is unknown, but it does seem to be an entity far too elaborate and refined to be a product. To me, it seems better to call it an original cause, and all other acts whatever effects.

Evolution as taught by Lamarck, Wallace and Darwin and by a host of their followers contains new things made possible in biological, electro-chemical and embryological laboratories, by means of the microscope and other delicate instruments; but the great underlying principles were all embodied in that vast Aryan Hindu philosophy, Samkhya, founded by one of the world's great philosophers, Kapila. It spread all over India,

Iran, Bactria, the Aryan states of Asia Minor and reached Greece. It still has many adherents in the Orient, in Europe and of late in the United States, and their number is increasing with the rapid spread of Oriental literature.

Kapila had influence on later systems, and his mighty Mind awakened trains of thought in the Minds of Plato, Pythagores and Aristotle, for there is scarcely a doubt but that those "modern" philosophers drank from deep springs opened by their direct ancestors, the great ones of ancient India.

SCIENCE AND PHILOSOPHY

It is difficult to find anything new in modern abstract philosophy and evolution is no exception. Kapila in his secluded hut, and in the forests of the Jumna and Ganges, taught his attentive students of the "eternity of matter." The most recent science teaches of electrons. "The Samkhya system of the sage, Kapila, explains the visible world by assuming the existence of primordial matter from all eternity, out of which the Universe has by successive stages evolved itself." (Hunter's Indian Empire, p. 99.)

Now, the latest tendency of science is to say that "primordial matter" does not consist of matter in the ordinary meaning, but of electrons of electricity in a motion so rapid as to be beyond all powers of imagination. Thus a common stone is made of electrons in rapid revolution around each other; a piece of iron is of still more rapid motion, and a diamond of much higher rates.

The only way to get at this is to say that if these electrons should stop revolving or of flying from one revolving set (an atom) to another, matter as we know it would cease to exist. For short, matter is motion of electrons.

Kapila called this motion isvara, and his conception of it is one of the most wonderful flights of human thought. I have had in my hands perhaps 100 abstruse books on this fascinating subject. One human lifetime could easily be passed away in the refined labyrinth of any one of the six great systems of ancient Hindu philosophy—the great reservoirs, whence all later have been drawn—deep cisterns of mentality, on thought anew.

We would call the system in "Western Thought" a remarkable philosophy in this: It seems to take for granted that pri-

mordal matter manages itself or evolves itself or builds itself into the visible universe or structure of nature roundabout, and palpable to our five senses. And the electrons, actually isolated in 1903, seem to know what to do, but really are directed by the Creator. Things are not what they seem to be.

"This world was in the beginning darkness indeed; moved by the highest it became uneven."—From Masirayana Upanishad, v. 2." No knowledge is equal to that of the Samkhya."—Mahabharata, vii. 1167. But Hindu wisdom could fill these pages for the next twenty years. Suffice to say that every phase of evolution capable of being thought by modern men was elaborated 4,000 years ago by the giant intellects of our Aryan ancestors in sight of the Himalayas.

That is, in abstract speculation, and this without instrumental aid, such as microscopes in modern discovery of cells in plants and animals.

DIRECTIVITY—ACTIVITY

The words directivity and activity were employed in an entirely new sense shortly after the discovery that possibly nothing is in existence but electricity. And this in the form of primordial basic electrons. The new doctrine is that nothing exists but these excessively small bodies, and that they compose all things, all forms, suns, worlds, all objects thereon, all animals, all molecules and atoms, animate and inanimate. They move with the most incredible velocities, they build up objects. And now the reader is invited to look closely into this great modern generalization of science.

I have used the expression "they build up all objects" within the entire range of human experience, human sense aided by the most powerful instruments. This incessant, perpetual and apparently eternal work is in intense activity. Atoms fly together and unite into molecules, and these wheel into place and form the most beautiful crystals with unerring precision and with amazing rapidity. I have watched them by the hour in rapid formation in high power microscopes. All the varieties, shapes and geometrical forms known to mineralogists form without trace of error, no matter how complex, how many sides and angles. And the rates of motion, the speeds of translation through the liquids of solution are beyond imagination.

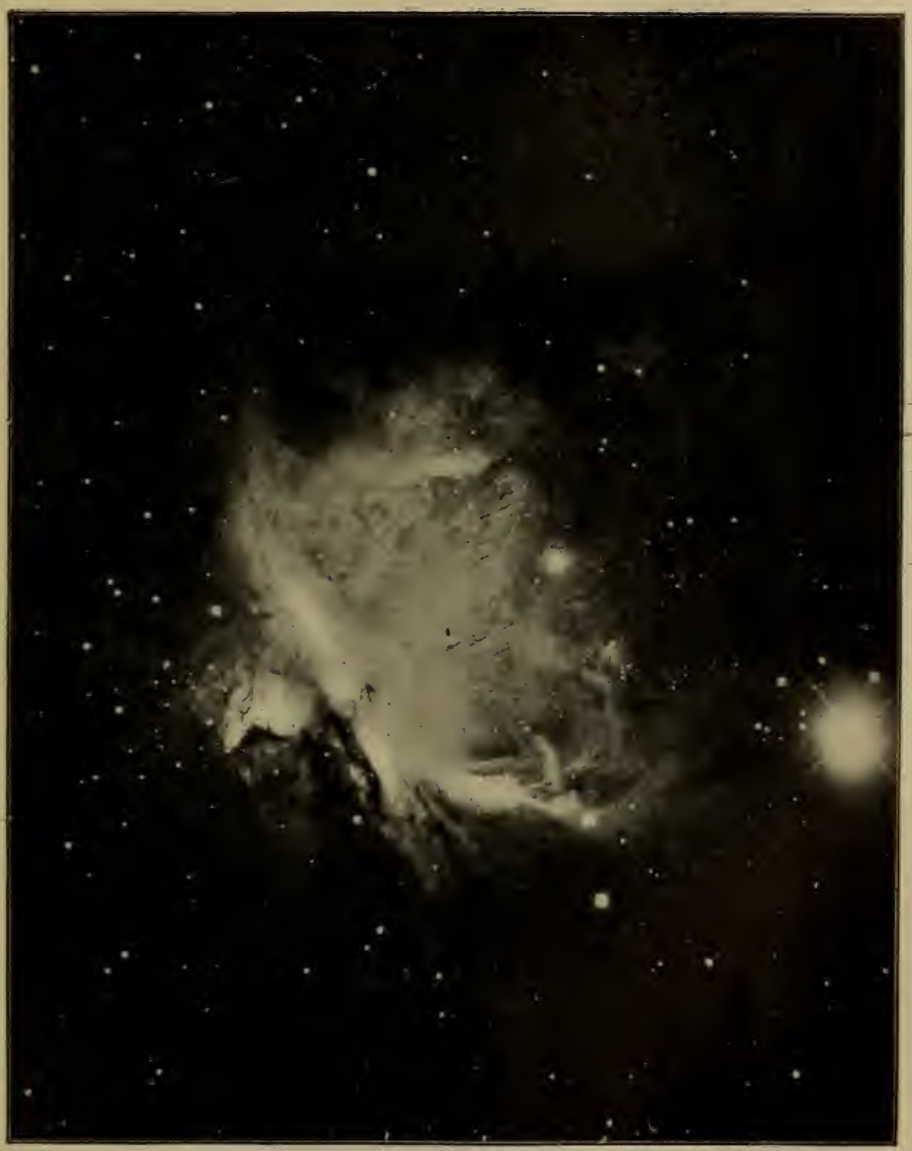
The process of building up structual forms is very impressive to behold or contemplate.

Now, the power behond it all is directivity. What is its true nature? There are two ways only of answering this question. The mysterious force is either inside the electrons or without —this is self-evident. But if inside, they direct themselves. If the reader admits that the directive force is within, then the powers of the human Mind in its present phase of evolution are at once exceeded. And of course exceeded if you admit that the force acts upon electrons from without. At all events, the force deals with electrons, atoms and molecules. These are the builders and workers. After molecules are formed they begin at once to build up masses large enough to be seen in the most powerful microscope. And then keep at work until they build worlds and countless suns. Electrons, atoms and molecules are all totally invisible in any microscope.

But the nature of these bodies may forever be unknown, or the mind may expand far enough to be able to understand them. At present none knows what an electron is, but all facts tend to the belief that it is electricity.

There is another mighty phase of this subject; another point of view, another labyrinth in a new region of exploration—the mental. These electrons act precisely as though they know what to do, where to go and when to act. This is more wonderful than all else beside. To know is a property of a still deeper mystery than electrons—Mind. Now this much is certain, the electrons either know how to build or there is a mighty builder in their immediate presence perpetually. An electron cannot rest for an instant; it must move with velocities of from 10,000 miles per second up to 186,380 miles in the time of one swing of a second's pendulum. How can an atom go to its exact place to build up a form or body without either knowing where to go or being directed by a power that does know? We cannot escape the word know. But it is improbable that electricity knows; yes, certain that it does not.

We are standing on critical ground; if we say electrons know where to go, we assert that they are Mind itself, because there is no matter, i. e., what we call matter in an electron. If we say Mind directs them where to go to build, then we at once put the entire universe on a rigid mental base. And then we land in the middle of another maze; electrons are made of electricity, if such an expression—"made of"—can be used in the connec-



Great Nebula in Orion—Attempted description, page 481. One of the most awe-inspiring objects in range of the most powerful Telecameras.

tion. Then Mind is the maker. And the literature of the world is tinged with this idea at present. Then we have the new science—mentalism, greatly increased over all previous Mind study. It follows that there is only one kind of Mind, or, shorter still, one Mind. And the two words, "cosmic consciousness," keep appearing in papers and books now being published in all the prominent languages. This means Mind universal.

Let us get back to earth again: Electrons—centers of force—have Mind within—that is, are Mind; or Mind is always in their immediate environment. There is no use saying "electrons move to build because they have to or must," for that would imply a director only. How would it do to put it in a very old word, Creator? This word has been out of fashion for some time, but is now being used again here and there. Then the director becomes the Creator.

PROFESSOR WEISMAN'S UNIVERSITY ADDRESS

"Forty-one years ago, when I delivered my inaugural address as professor of this university, I took as my subject, 'The Justification of the Darwinian Theory.' It is a great pleasure to me to be able to lecture again on the same subject on the 100th anniversary of the birth of Darwin. This time, however, I need not speak of justifying the theory, for in the interval it has conquered the whole world. In my former lecture I compared the theory of descent or evolution to the Copernican Cosmogony in its importance for the progress of human knowledge, and there were many who thought the comparison extravagant. But it needs no apology, now that the idea of evolution has been thoroughly elaborated, and has become the basis of the science of life, but if so, not a complete base.

"The 'secret law' was the law of descent, and the first to advocate this idea and to formulate it clearly as a theory was, as is well known, also a Darwin, Charles Darwin's grandfather, Erasmus, who set it forth in his book, 'Zoonomia,' in 1796.

"All these disputed the venerable Mosaic mythus of creation, which had till then been accepted as a scientific document, and all of them sought to show that the constancy of species throughout the ages was only an appearance due, as Lamarck in particular pointed out, to the shortness of human life.

"In 1830 the final battle between the theory of evolution and the old theory of creation was fought out by Geoffroy St. Hilaire and Cuvier in Paris Academy. Cuvier triumphed, and thus it came about that an idea so important as that of evolution sank into oblivion again after its emergence, and was expunged from the pages of science so completely that it seemed as if it were forever buried beyond hope of resurrection.

"Cuvier held fast to the conception of species created once and for all.

"The ovum, now at last recognized as a cell, was seen to be a reminiscence of the descent of all higher animals from unicellular organisms; rudimentary organs, such as the rudimentary eyes of blind cave animals, were found to be sign posts indicating the racial history of these animals, and pointing back to their sight endowed ancestors. This evolutionary view illuminated the whole science of embryology and also comparative

anatomy, the understanding of the structure of animals. It became plain why the New Zealand Kiwi should have little rudimentary wings under its skin, although it does not fly. It is not in order that it may conform to an ideal of a bird, as was previously thought, but because its ancestors had possessed wings which were used in flight. Physiology also gained much, especially the theory of reproduction, of heredity, of organs, of the cell, and especially of the nucleus. Anthropology gained quite a new interest after it was recognized that man, too, was a product of evolution. It was necessary to investigate the gradual becoming not only of the body, but of the Mind, the evolution of the Psyche and all that flows from it. Undoubtedly the study of the psychology of animals is one of the essential tasks of the future. Our greatest gain from the theory of evolution has, however, been the evidence it affords of the unity of nature, the knowledge that the organic must be referred back to the same great everlasting laws which govern the inorganic world and determine its course. Even if formal proof of this be still wanting, the probability is now so strong that we can no longer doubt it. It is not the theory of evolution as a whole, but the active principle in it, the principle of selection, that is transforming and illuminating all our old conceptions.

"The principle of selection has so often been applied in an inverted sense, as if the brutal and animal must ultimately gain the ascendency in man. The contrary seems to me to be true, for it is the Mind, not the body, that is decisive in the selection of the human race.

"But it was Darwin with Wallace, who secured it (evolution) its place in science and made it a common possession of mankind by working it out in all directions, and supporting it with another principle, that of selection, which explains the riddle of the automatic origin of what is suited to its purpose in nature.

"There fell also the discovery, in animals and plants, of that smallest microscopically visible building stone of the living body, the cell. In botany progress was made and the discovery of alternations of generations, a mode of reproduction that had previously been known in several groups of the animal kingdom.

"It was found that the proposition which had hitherto been accepted as a matter of fact, that an egg can only develop after

it has been fertilized, is not universally valid, for there is a development without previous fertilization—Parthenogenesis, or 'Virgin Birth.' "—August Weisman, Scientific American Supplement, May 13, 1911, p. 298.

BIOLOGY

Greek, bios, life, plus logos, discourse, a talk about life.

When it was first written that "protoplasm is the physical basis of life," no mention was made of Mind. Mind is a rare word in some books on biology; and in others that do use it, sufficient stress is not laid upon it. Of late, Mind is securing a hearing in such works as "Binet's Psychic Life of the Micro-Organisms." The word "psychic" should be changed to the word mental. Thus the one great entity above all others within range of human cognition, the most exalted entity, the very one most intimately associated or connected with life, is not placed in front, but often in the middle or rear of advancing science. Omitting the mention of Mind by a biologist is roughly comparable to building a steam locomotive without a firebox. Positively, Mind is the only entity able to evolve. Well expressed in the homely saying: "Think new thoughts."

The moment in which the ancient error of "the spontaneous origin of life" was abandoned was the one critical moment in biology, the auspicious instant when the mental origin should have been searched for by day and by night. Instead, all energies were concentrated in the physico-chemical, activity not directivity. Three medieval biologists, and microscopists, Swammerdam, Malpighi and Leeuwenhoek, believed in pre-formation and pre-delineation of the embryo. Spermatozoa with the latter were androgynous, both male and female in one. And he made imaginary drawings of these. No allusion was made, however, to the fact that pre-formation and delineation could not be wrought by any agency but Mind. Richard Owen's archetypes were approaches to the Mind-plan of Nature. Mind is so refined that its expression is in the most delicate nerve fibers, invisible in ultra-lenses and in yet unseen sense-organs. The actual habitat of Mind, like itself, so far as science can now determine, must remain invisible. Then it must be studied by means other than those of seeing. These means and methods then, must all be mental.

Mental forms must be studied. These are as distinctly recognized as are the visual, due to light and transmission of visual images by optic nerve to the optic thalamus. The subtle "pneuma" controlling the body, of early theorists, is here called Mind.

Johannes Muller joined physiology and psychology, making unfortunate use of the word psychology in place of mentology. How can it be said that looking still farther backward than chemistry and physics in the research into life, backward ever toward Mind, is mysticism?

Vitality, living-force, life, are therefore not mystical, they are due to the action of Mind. Certainly Mind is mysterious in the ordinary meaning of the word. But mystery is derived from Greek myo, to shut the eyes, as when blindfolded candidates were being initiated into the mysteries, secret societies of all ancient nations, like those at Arsinoe, Eleusis, Samothrace and Crete. Thus to shut one's eyes to the domination of Mind is to enter a mystery of some kind. Ultimate analysis, chemical analysis ends where mental begins.

Every animal above the one cell beings, commences life in one microscopic cell; and rises through all grades to the finished adult. But the thought originally expressed in the first cell is never forgotten; nor its outline, the pattern of the species. The "hyperphysical force" invented by early biologists, that works in the cell and embryo is also here called Mind.

"The eggs of all vertebrate animals, regardless of size and condition, are really single cells, likewise sperm. The egg, a single cell, by successive divisions produces many cells, which continuing to multiply by division, not only increase in number, but also undergo changes through division of physiological labor, whereby certain groups were set apart to perform a particular part of the work of the body. But the egg, before entering on the process of development, must be stimulated by the union of the sperm with the nucleus of the egg, and thus the starting point of every animal and plant, above the lowest group, proves to be a single cell with protoplasm derived from two parents." p. 223, Biology and its Makers, William A. Locy.

But "set aside and division of labor," are entirely Mind processes. How can chronozoons apparently precisely alike in the highest microscopes, establish a division of labor? Work

to advantage in many different parts of an embryo, in as many different kinds of labor, building totally unlike tissues, nerves, muscles, and bones, surely and inevitably demands the action of Mind. No other explanation is tenable. The fact is, no other can be imagined. Mind divides the tiny laborers, and builders. And no other conceivable entity can perform this most remarkable division of workers. This is a basic, and cardinal fact in biology, unlike workers building completely dissimilar and unlike structures.

GERMINAL CONTINUITY

"The conception that there is unbroken continuity of germinal substance between all living-organisms, and that the egg and the sperm are endowed with an inherited organization of great complexity, has become the basis for all current theories of heredity and development. So much is involved in this conception that, in the present decade, it has been designated (Whitman) "the central fact of modern biology." Locy, p. 225.

This is indeed a fundamental fact, but inheritance takes place in the chronozoons. These were all descended from the first one of each kind, type, species and form of living beings that ever existed on earth. Each chronozoon is today like the first one that developed into the first plant or animal of any given kind whatever. So impressive has been this fact to some writer that he wrote: "Cells are immortal." And they are surely the only entities destined to endure from the first on this planet to the last, whatever may be the thousands of years in between the beginning and end of any type.

"Typical forms and special ends" is a good saying, likewise "conscious plan," but the word conscious has as many facets as an elaborate diamond. Species means continuity itself, so long as thermal and electrical conditions obtain on earth, conjoined with moisture and light. What can be inherited save models, types, patterns, and what entity can form a pattern but thought itself or Mind? Then the "central fact of modern biology" is Mind.

"A statement of the cell-theory at the present time, then, must include these four conceptions: the cell as a unit of structure, the cell as a unit of activity, the cell as embracing

all hereditary qualities within its substance, and the cell in the historical development of the organism." P. 252, Locy.

But limitless wonders center in the nucleus. Thus: "It was discovered that the nucleus contains a definite number of small (usually rod-shaped) bodies, which become evident during nuclear division, and play a wonderful part in that process. These bodies are designated chromosomes. Attention having been directed to these little bodies, continued observations showed that, although they vary in number—commonly from two to twenty-four—in different parts of animals and plants, they are, nevertheless, of the same number in all the cells of any particular plant or animal. As a conclusion to this kind of observation, it needs to be said that the chromosomes are regarded as the actual bearers of hereditary qualities." Locy 254-5.

This is set and fixed proof of Mind manifestation. The mighty word "number" appears in the quotation. And the "same number" in any particular plant or animal." This is one of the greatest basic discoveries ever made; far greater than that of Neptune, 2,780,000,000 miles from the sun.

Numbering, or counting, is absolutely a process of Mind and that alone. Two, four, eight, twelve, twenty-four positively had to be counted. Every mathematician knows this to be true. More than this,—the fixed number of chromosomes in any fixed cell the base of any set species, type or kind of plant or animal, had to be pre-determined before counting began. It is useless to set up any denial, or evasion. I repeat and assert that the number of units destined to be enclosed in the nucleus had in the very nature of the problem to be determined before the formation process began. After it began, the units had inevitably to be counted.

The central fact in biology is Mind. The remarkable body, the centrosome is by many thought to be a dynamic agent: if so it is also a mental agent.

"In the case of fertilized eggs, one-half of the chromosomes are derived from the sperm and one-half from the egg. Each cell thus contains hereditary substance derived from both maternal and paternal nuclei," p. 257. The precise truth regarding inheritance. But a greater truth is the counting of chromosomes and accurate division into two halves. For pre-determination of dividing equally is manifest, then watchful care coupled with precision in counting and dividing. Thus

eevry word describing the beginning of a plant or animal is a purely Mind-word.

"The establishment of the cell-theory was one of the great events of the nineteenth century, and further, it stands second to no theory, with the single exception of that of organic evolution, in advancing biological science," p. 258.

Professor Locy here makes a subsequent process greater than its beginning. The beginning of anything is the chief fact in Nature. The beginning of organic evolution is the act of assembling chromosomes. Since Mind and only Mind began the work, it is Mind that continues it. Organic evolution is a purely mental process. Thus the word evolution is inseparably joined to Mind. Then Mind primordial is itself in EVOLUTION, unfolding, i. e., thinking new thoughts. This is the real base of biology: Mind is the foundation of life.

PROTOPLASMIC CIRCULATION

Is it possible that the eye of man can behold anything more impressive, awe-inspiring and wonderful, than a dense region in the Galaxy in the deeps of a dark night in a great telescope?

Forty thousand suns strewn as diamonds in the blackness of space at one view. What can be more exalted within range of the human eye? One view only can be more inspiring and that is the marvelous motion of living protoplasm in a high power microscope. The incessant Brownian motions of particles suspended in liquids, are impressive beyond the power of the speech of man to describe; but these flying fragments of matter do not contain life. But protoplasm is living and the motions are life-movements.

The bottom of the Maze has been reached: an end of a corridor; and in front is a chamber whose door is locked and barred. What establishes this perpetual circulation of protoplasm; of microscopic particles thereof in revolution or in streaming?

"It will be convenient now to turn our attention to the microscopic examination of a plant that is sufficiently transparent to enable us to look within its living parts and observe the behavior of protoplasm. The first thing that strikes one is the continual activity of the living substance within the boundaries of the cell. This movement sometimes takes

the form of rotation around the walls of the cell. In other instances the protoplasm marks out for itself new paths, giving a more complicated motion, called circulation. These movements are the result of chemical changes taking piace within the protoplasm, and they are usually to be observed in any plant or animal organism. Under the most favorable conditions these movements, as seen under the microscope, make a a perfect torrent of unceasing activity, and introduce us to one of the wonderful sights of which students of biology have so many." Locy, p. 261.

Sometimes this rotary motion of the entire contents of a cell is in one direction; at others, along cell walls in one direction, return through the center in opposite direction, and along the side of the opposite cell wall in the first direction. At times currents in the plasma, are in a number of opposite directions, thus keeping up a complex circulation. Now the fundamental question arises, What causes this most remarkable motion, and series of motions in varying directions?

Now I here write, assert and state that Mind, and Mind alone, starts and maintains this marvelous circulation within the cells of every plant and animal in existence. And this from the first to the last cell on earth. Chemical changes are not motions of translation and circulation whether a rotation of all the plasma within the enclosure, or streaming in all directions.

Chemical action obtains only between atoms and molecules in their union to form compounds. But the particles immersed in protoplasmic matter are hundreds and thousands of times larger than molecules and atoms. And it does not appear that new compounds of carbon, nitrogen, etc., are being formed by rotation or any kind of circulatory motion. Chemical union of atoms occurs at excessively close range, the radii of the spheres of activity of atoms, or around atoms are exceedingly short, thousands of times shorter than are the paths traversed by particles in the interiors of cells—chronozoons. Since chromosomes in nuclei are counted, separated and divided, arranged and placed by Mind, all circulations and rotations are therefore due to the same magnificent cause. But then, chemical action wherever it occurs is likewise established by Mind. But the motions of rotation and translation in chronozoons are not chemical in their nature.

BROWNIAN MOTIONS

Brownian motions and the movements of spores as in the case of the plant protococcus are remarkable and worthy of elaborate study by means of micro-photography on moving picture films and high power projection.

"The offspring of plants as well as of animals, resembles the parent, and among all organisms endowed with Mind, the mental as well as the physical qualities are inherited." Locy p. 305.

I would say that all animals from the lowest microscopic, are endowed with Mind, and that Mind is inherited, but not qualities of Mind. Thus children of great musicians, have been unable to read notes; and of mathematicians, to compute, in a number of notable instances. But the entire question of inheritance may as well be held open until the mentality called the personality is explored. Thus no adult person, even if the person is a skilled mentalist, knows anything of his own personality, to say nothing of the personality of any other person. By continued, arduous research, during the remainder of this the twentieth century, in human personality, some discovery, hint, clew, or suggestion as to what it is may be secured. No law of inheritance can possibly explain personality, mentality, individual Mind. The complex, heredity will not be discussed in this book further than to give a few opinions of eminent biologists. The first will be that of the idioplasmic theory of the botanist Nageli, that the reader may compare methods adopted in attempted solution of this fascinating but intensely intricate problem. The problem is: has there ever been a continuous chain of germ-life transmission from each chronozoon's beginning until now?

HUMAN LABORATORY

"Weismann's idea of germinal continuity, i. e., unbroken continuity, through all time of the germinal substance, is a conception of very great extent, and now underlies all discussions of heredity. In order to comprehend it, we must first distinguish between the germ-cells and the body-cells.

Weismann regards the body, composed of its many cells, as a derivative that becomes simply a vehicle for the germ-cells. The germ-cells are the particular ones which carry forward

from generation to generation the life of the individual. The body-cells are not inherited directly, but in the transmission of life the germ-cells pass to the succeeding generation, and they in turn have inherited from the previous generation, and, therefore, we have the phenomenon of an unbroken connection with all previous generations.

When the full significance of this conception came to us, we saw why the germ-cells have an inherited organization of remarkable complexity. This germinal substance embodies all the past history of the living impressionable protoplasm, which has an unbroken series of generations. The application of the microscope to critical studies of the germ-plasm has brought important results which merge with the development of the idea of germinal continuity. Can we by actual observation determine the particular part of the protoplasmic substance that carries the hereditary qualities? The earliest answer to the question was that the protoplasm, being the living substance, was the bearer of heredity. But by close analysis of the behavior of the nucleus during development led, about 1875, to the idea that the hereditary qualities are located within the nucleus of the cell. This idea narrowed the attention of students of heredity from the general protoplasmic contents of the cell to the nucleus. In 1883, Van Beneden and Boveri made the discovery that within these nuclei are certain distinct little rod-like bodies which make their appearance during cell-division. These, inasmuch as they stain very deeply with the dyes used in microscopic research, are called chromosomes. And continued investigation brought out the astounding fact that, although the number of chromosomes varies in different animals (commonly from 2 to 24), they are of the same number in all the cells of any particular animal or plant. These chromosomes are regarded as the bearers of heredity, and their behavior during fertilization and development has been followed with great care.

Brilliant studies of the formation of the egg have shown that the egg nucleus, in the process of becoming mature, surrenders one-half of its number of chromosomes; it approaches the surface of the egg and undergoes division, squeezing out one-half of its substance in the form of a polar globule; and this process is once repeated. The formation of polar globules is accompanied by a noteworthy process of reduction of the number of chromosomes, so that when the egg nucleus has

reached its mature condition it contains only one-half the number of chromosomes characteristic of the species, and will not ordinarily undergo deevlopment without fertilization.

The precise steps in the formation of the sperm have also been studied, and it has been determined that a parallel series of changes occur. The sperm, when it is fully formed, contains also one-half the number of chromosomes characteristic of the species. Now, egg and sperm are the two germinal elements which unite in development. Fertilization takes place by the union of sperm and egg, and inasmuch as the nuclei of each of these structures contain one-half of the number of chromosomes characteristic of the species, their union in fertilization results in the restoration of the original number of chromosomes. The fertilized ovum is the starting-point of a new organism, and from the method of its fertilization it appears that the parental qualities are passed along to the cells of every tissue.

The complex mechanism exhibited in the nucleus during segmentation is very wonderful. The fertilized ovum begins to divide, the nucleus passing through a series of complicated changes whereby its chromosomes undergo a lengthwise division—a division that secures an equable partition of the substance of which they are composed. With each successive division, the complicated process is repeated, and the many cells, arising from continued segmentation of the original cell, contain nuclei in which are embedded descendants of the chromosomes in unbroken succession. Moreover, since these chromosomes are bi-parental, we can readily understand that every cell in the body carries both maternal and paternal qualities." Locy, pp. 312-13.

MENTOGENESIS

How one can read these results of elaborate researches and not see the immanent action of Mind is a mystery. The casting out of one-half of the chronozoons from the female ovum, and one-half from those in the male, is surely the action of selecting, discriminating, calculating and planning Mind. Counting the numbers in each germ ovum and sperm is positively performed by Mind, the only entity in existence able to count. Design, plan, foresight, will, volition, pre-forma-

tion and pre-decision are all on display here in absolute fullness and precision.

Heredity, the transmission of inherited qualities from parents to offspring is positively a mental process. And equality reigns between male and female. Inheritance of acquired characteristics is not permanently true in any species of plant or animal. Characteristics of species are enduring from first to last on earth.

For: "The hybrid, whatever its own character, produces ripe germ-cells, which produce only the pure character of one parent or the other." p. 316. Pure, changeless, immutable germ-cells exist on the earth from beginning to end of the species. One can change lead into gold as easily as the promordial germ-cell into another differing in specific characteristic of the species. The number of chronozoons is as changeless as are the set numbers in the arithmetical multiplication table. Thus let the horse evolve, change, mutate through a number of phases in genera and species, during any number of millions of years, then through all; the original mentoid, phrenoid, thought-form of the horse has endured and will exist to the end. This is true evolution. The Mind plan changeth not.

Then Mind is evolving, inventing, experimenting, mutating, progressing, advancing ever toward perfection—toward the absolute state, Master Mind. Not absolute Master of invention, until all possible inventions have been made. And all possible changes rung in electrons. It is Mind that is evolving. Then the theory of evolution becomes all the more magnificent. Thus thought-forms in geological succession become fossilized in rigid stone; animals and plants are set in obdurate silicates. Other thought-forms, words, become fossilized as it were, obsolete in lexicons, with the expansion, evolution or mutation of Mind nearer to heights sublime. Fossil plants, animals and words are all historic mentoids, or phrenoids; ideation, mentation, fixed and set as in plaster casts.

The entire theory of ascent from protista to man, attempts, rudimentary and residual parts and organs whatever, are accurate expressions of phases, steps, changes advances in inventive Mind. For chronozoons were accurately numbered and counted. Monsters and monstrosities, freaks and abortive forms are all due to errors in counting or in some other way. mistakes, oversight, failure to do a certain thing, at the proper

instant, precisely as in the case of a train dispatcher making a lapse, an error, a mistake, or passing a moment in forgetfulness. And this too, makes the great doctrine of evolution the more exalted and sublime. With primordial things all absolute in perfection, there could be no expansion of Mind. No need of it, may be said if all is perfect. But there is need of advance, action, improvement, progression or stagnation would set in. This is the very nature of Mind. Thus gill-slits in the neck are comparable to obsolete words in the dictionary, and useless toes. And fascination increases as this biological and evolutionary study and mutational goes on apace, into deeper and wilder recesses Within the Maze.

In subsequent pages the mental phase of evolution will become more and more pronounced. The only definition of evolution in this book is unfoldment. Within the Mind realm this is known as the appearance of new thought and imaging. In the material or mechanical realm, evolution is very crudely comparable to the unfolding of the petals of the rose. Imaginings in Mind become fixed in electrons and all subsequent forms in which matter has been, is now assembled or may be in the future. Astronomical or cosmical evolution is to be treated in another volume; organic, or life-forms in the remainder of this, or what is the same—Mind-forms, expressed or manifested in matter that contains life.

An attack is here and now made upon the doctrine, theory or hypothesis called Natural Selection. It is antagonized from beginning to end. Even the word selection is here sought to be annihilated from all writings on biology; and the word Direction inserted. Selection is activity disguised. But this ancient error cannot be hidden by any word, term, phrase or sentence. All living from Badarayana to Aristotle, Darwin, and De Vries in combined effort cannot hold up Activity where the sun can shine upon it. None is able to even aspire to an attack upon Directivity. Even the Mind within one micella of Nageli is continuously directed, or was taught how to function in its beginning by Mind. Continuous evolution in Primordial Mind is a set fact; and phases, advances, steps, mutations, expressed in organic forms manifesting life is a fixed, rock-hewn fact.

"I shall proceed from the primitive, unorganized condition of matter and endeavor to show how organized micellar substance has arisen in it, and how, from this micellar substance,

organisms with their manifold properties have arisen. Since such a synthesis of organisms out of known forms of matter and force is still far removed from a conclusion strictly in accord with physical law, the process becomes comprehensible and obvious only by exact knowledge of the discussion that has preceded." Carl Von Nageli, by F. A. Waugh, p. 1. "Far removed from physical law" is true; removed into Mental law.

"Organic evolution is not a question of creation through divine agencies, or of man-creation, but a question of method of creation." Locy, p. 348.

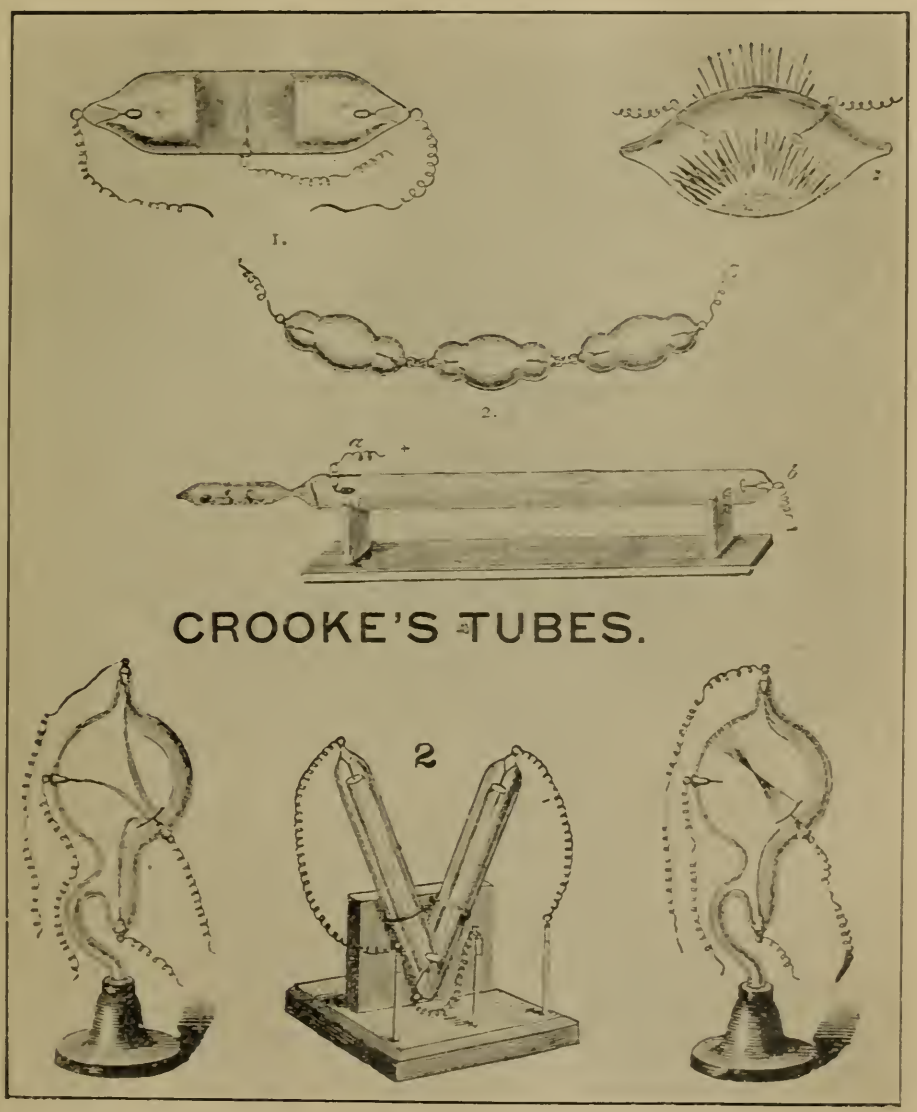
THOUGHT MODELS

In the absolute nature of the Universe and Man, the Mind-man, mental part of man, creation is completely impossible without a preceding plan, design, image, concept, or form of the object to be created. But all these words are Mind-words, or for short—Mind. Then Mind directs, orders, dominates, or controls the work of formation. And no entity in existence, or that can exist is able to do this but Mind. Selection! Who selects? What selects? If there is selection, it had to be commanded or ordered by a commander. For selection is activity not Directivity. Great diversity in the Universe from electrons to suns; and from micella to mammoths, is due entirely to the inconceivable diversity in Mind manifestations. For Mind has more, or is capable of having more, phases, modes, varieties, kinds, types, qualities, states and conditions than can be numbered by any assignable number of integral digits. Thus take the case of the reader. Unless his Mind is differentiated mathematically, he would be unable to follow a trained mathematician in his Mind-soarings. For modern mathematics has already an inconceivable (by any one mathematician) number of diverse aspects or phases. Thus a second grade mathematician cannot think the thoughts, nor imagine the complexes of numbers, delighted in by a first grade; nor a third grade of the second. And a non-mathematical mentality cannot think along with a third grade mathematical person. Thus it is now known that mathematics possesses infinite diversity. Then mathematics was created by a Mind that is Infinite—Mind.

Thus diversity in Nature is due to diversity in Mind, its cause. For evolution is a most admirable plan, design or

method of creation, all planned and designed in a methodical way by Mind. Selection never has entered the plan as a factor. That is, selection and direction, activity and directivity cannot exist at the same time in the same Universe. That is, inherent activity is non-living bodies; and greatly restricted in those that are alive.

"The truth is, that an explanation of development is at present beyond our reach. The controversy between preformation and epigenesis has now arrived at a stage where it has little meaning apart from the general problem of physical causality." How it is possible to keep up a controversy between preformation and epigenesis cannot be understood. The next sentence contains words which at once decide the question forever in favor of preformation. Thus: "What we know is that a specific kind of living substance, derived from the parent, tends to run through a specific cycle of changes during which it transforms itself into a body like that of which it formed a part." Specific means specification; also a set or determined plan: but only Mind is able to specify or determine. And this is the nature of language. That is, we cannot even think or speak of a specific of anything or entity without also thinking of the specifier. "Living substance" I would change to living matter; for electrons only constitute substance, whence all matter has been formed: and "transforms itself" should really read "is transformed." Note this difference: No transformation whatever obtains in the mentoid in the chronozoon; whatever mutations may take place in the living matter in the offspring. Again: "But despite all our theories we no more know how the organization of the germ-cell involves the properties of the adult body than we knew how the properties of hydrogen and oxygen involve those of water. So long as the chemist and physicist are unable to solve so simple a problem of physical causality as this, the embryoist may well be content to reserve his judgment on a problem a hundred-fold more complex." p. 433. This is true, we know nothing of how the organization involves the adult; and true, because no microscope can see Mind, nor chemist nor physicist find it. This is the end of physical science; and also a magnificent beginning of mental science. I cannot conceive of a problem a hundred-fold more complex, than that of solving the mystery of one chronozoon even if its dimensions are down to those of one molecule, or



High Vacua—Fourth state of matter. These tubes are exhausted of air down to one-millionth and even to one twenty-millionth part. When high pressure electricity was applied to the metallic terminals, the phenomena were so extraordinary that Crookes assumed that matter was in an ultra-gaseous or fourth state. Researches made with electricity in these tubes ultimately led to the breaking down of atoms into primordial electrons.

even atom. No problem in the higher astronomy can compare with that of finding one absolute unit of life. Epigenesis is the familiar activity in another phase. It cannot stand. Performation is the word to use and the first chronozoon of any species, set and specific for all terrestrial existence, was formed, and by Mind. Suppose that a living being whose diameter is no greater than that of a molecule exists. Then it possesses activity, but in a restricted sense. Thus it would know how to secure food, move toward and away from objects, associate with like beings, flee from enemies, and divide into two living beings like itself. This is as far as unicellular creatures could go by the activity due to life, over a non-living particle. But a trillion would not know how to assemble into a fish or man. Directivity only of Mind is able to thus assemble chronozoons.

This word is here substituted for the word cells. Chamber, cell, are words in no way applicable to the excessively minute living units whether alone or combined into an animal, or whether filled with protoplasm or empty. I cannot refrain from speaking of the mysterious word chroneo again. What were the Greeks thinking when they originated this word? They applied a time-word to life. A refinement of this is we live during a time; in time, or live time. This is the height of speculation or depth of fact. Incredibly wonderful is the origin of words, and mystical the Logos.

Chronozoons are ephemera, from ephemeros, for a day, from epi, on, plus hemera, day. But many of these minute being do not live so long as one day; and others not an hour. Some divide into 2, 4, 8, 16 in less than three hours. Suppose that very minute chronozoons live during a minute, or a second; then life is continuous from the first to be formed or earth to the last. This is true for all animate things from chronozoon to man, continuity from formation of first to disformation of the last on this planet. Thus pangenes, and their pangenesis both fall before phrenoids, and mentoids, Mind-genesis, the only one.

One chronozoon is a complete integer or unit. But when millions are assembled in the formation of an animal is each aware of the existence or influence of all the others? Does a chronozoon in the leg sense the existence of one or many in the head or arm? Are chronozoons in the brain in complete communication and control of all those in the entire body?

When Europe made war on China, a few years ago, the fact stands out that Chinese in the remote interior were ignorant of the war until after peace had been declared. Can such ignorance obtain in the body of an animal?

This is a fundamental life-problem. The life of a plant or animal cannot be understood without knowing the relation of each unit to all the others. Life is Mind moving matter in a restricted manner. Mind is in the life process manifesting in a certain state or phase, whose result is life. Each chronozoon senses all the others; although each one is an integral unit. But sensing, becoming aware of, feeling the influence of are all mental terms. Each unit is a center where the growing, expanding, building or forming force operates, but each is related to all the others. Each is a builder working by plan. If not, the animal could not be completed. But the word plan is wholly mental. The control of one unit by all the others is absolute: but control is a Mind-word. Conveyance, transmission, distribution of ruling, directing force from all the chronozoons in a growing animal to each of the others to build by definitive plan is a set fact. But the words employed in mentioning the process are all mental. Likewise the words mentioning and process; also the the word likewise; also the word also. We cannot escape the dominance of Mind, nor speak without using Mind, first, to summon Mind-words and then speak them. Then words are manifests of Mind.

Ultra-microscopical research has failed to find connection between chronozoons in many instances. These may exist, the filaments or threads being too fine to be seen by any magnification. But whether connected by bridges or not, they are by Mind. Thus a mass of protoplasm moves as one body, the rear following those in front as if aware that all other parts had started. Protoplasmic continuity therefore in the case of the starting, moving and stopping of an amœba is Mind-continuity also.

Cytoplasm, protoplasm, all contents of amœba, and all other such structures, are direct products formed by the action of the mystic nucleus within. And Mind directs the nucleus in its work of formation. The hypothesis of "discreet self-propagating units" is truth absolute, for discreet is high grade Mind-word. The chronozoons accept, reject, form and build with the most admirable discretion, judgment and intellectual discernment.

Self-propagating here is mind-propagating for the word self whenever and wherever used invariably applies or refers to Mind, the mental-personality. And this is set in the very nature of language.

"Every cell is endowed with a power of self-determination, which lies in the specific structure of its nucleus." Literal truth if rendered: every chronozoon is endowed (by an endower) with a power of self-determination, which lies in the (ultra-microscopic molecules) the specific structure of the nucleus. These life-molecules are formed of atoms, formed of electrons, created by Mind. The time-life, chronozoons, the molecules of living matter are mentoids, phrenoids, thought-forms.

THE IDIOPLASM HYPOTHESIS

Idioplasm, from idios, one's own, and plasm, from plasso, form, a thing formed or moulded, Greek. Plasma, Biol. The viscous material of a cell, protoplasm. The doctrine of Nageli: "The first systematic attempt to discuss heredity regarded as inherent in a definite physical basis: in essence it is the assumption that inheritance is effected by the transmission not of a cell, considered as a whole, but of a particular substance, the idioplasm, contained within a cell, and forming the physical basis of heredity. The idioplasm is to be sharply distinguished from the other constituents of the cell, which play no direct part in inheritance and form a nutritive plasma. Hereditary traits are the outcome of a definite molecular organiaztion of the idioplasm. This is an extremely complex substance consisting of elementary complexes of molecules known as micellæ. These are variously grouped to form units of higher orders, which, as development proceeds, determines the development of the adult cells, tissues, and organs. The specific peculiarities of the idioplasm are therefore due to the arrangement of the micellæ, and this, in its turn, is owing to dynamic properties of the micellæ themselves. A micella is an ultimate supra-molecular unit found in a cell." The definition of the word micella, is, one of the theoretical structural particles, which, according to Nageli, make up organized bodies: supposed from the optical properties of various elements of plant-structure to be bi-axial crystals, each enveloped by a film of water. Derived from Latin, mica, crum. This sentence defining the word micella is of almost transcendent importance,

for the word crystal appears therein. But crystals have all along been considered to be inorganic and lifeless. Great things center here, crystals therefore may be in the theory of Nageli, the first step in transition of lifeless into living matter —a hovering around and about the very base of life. See Burke's experiments farther along.

Darwin's theory of pangenesis is that the germs in cells contain innumerable ultra-microscopic organized bodies, called gemmules, from Latin gemma, bud, each of which is the germ of another cell. They are inconceivably minute self-propagating organisms, every one of which predetermines the formation of one of the adult cells. These are the pangens of DeVries, i. e., protoplasmic units whence cells themselves are formed. Then the contents of a cell are all formed by these gemmules or pangens, originating and growing in the nucleus, only to make exit and begin to build or form contents of all types and kinds of cells. Thus the wonderful nuclei in cells contain these all-powerful, vital, living gemmules, biophores or pangens. The point sought to be made here is that they are "innumerable"; "inconceivably minute," invisible in any ultra-microscope yet made; and above all, they themselves divide, separate into halves, grow, escape and build cells, as do the cells themselves later. "Every cell is thus endowed with a power of self-determination," exact words of Professor Edmund B. Wilson, in his admirable book, "The Cell in Development and Inheritance," p. 405. And it is from this book that many quotations are made in this work. But self-determination is an entirely mental process. Electrons, atoms, molecules, masses, do not know where and when to go or how to build —they are directed by Mind. But gemmules, pangens, biophores, ultra-microscopic in their excessive minuteness, all contain not only life but Mind. Is this Mind within pangens directed? This is a question beside which all others in biology and mentonomy are secondary. Electrons are entirely directed. Pangens contain Mind, but is this Mind directed by Mind? Or are all living things possessed of activity? If so, the line between the non-living and the living widens into a fixed gulf, deep and wide.

THE THEORY OF CELLS

Incorrectly named. Cell means chamber, but the minute membraneous sacks are filled with water, protoplasm, semi-liquid and the nucleus. "Schleiden and Schwann formulated the theory of organic cells in 1838-39," since when it has ever become more clearly apparent that the key to all ultimate biological problems must, in the last analysis, be sought in the cell. It was the cell-theory that first brought the structure of plants and animals under one point of view, by revealing this common plan of organization and opened the way to an understanding of the nature of embryological development, and the law of genetic continuity lying at the base of inheritance, and inaugurated a new era in physiology and pathology, by showing that all the various functions of the body, in health and in disease, are but the outward expression of cell-activities. No other biological generalization, save only the theory of organic evolution, has brought so many apparently diverse phenomena under one common point of view or has accomplished more for the unification of knowledge. The cell-theory must, therefore, be placed beside the evolution-theory as one of the foundation stones of modern biology."

Remarks on the quotations under the head, "The Theory of Cells."

"The key must be sought in the cell." True with the much smaller nucleus within, and the still far smaller than this, the granules in the nucleus; and yet more minute particles in the granules, the ultimate units of life where Mind meets life, where Mind creates life.

"Plants and animals are but varying expressions of subtle interior organization common to all." Truth itself, but the subtle interior organizing force is Mind.

"The germ is a portion of a pre-existing living body." True away back to the first, and its origin in the only pre-existing entity—Mind, the Creator of life.

"A single cell may contain within its microscopic compass the sum total of the heritage of the species." Indeed this is the cardinal truth, it contains the changeless mentoid, or thought-form of the species, original and as enduring as porphyritic granite. The primordial phrenoid, pattern and perpetual model of the particular species from its thought-origin to its end on a dead earth.

"Every cell is the offspring of a pre-existing cell." A fact, but the first cell was an offspring of Creative Mind, the only entity able to form a pattern.

"Cleavage can be traced back to the foregoing generation." Highly important, but foresight, preparation are both Mind words.

"Extending backward to that remote and unknown period when vital organization assumed its present form." Assumed here should be changed to "directed to." But Mind is only able to direct that vitality shall appear. But leave in the word assumed if one wishes: then the fact is apparent that assume is a Mind word. True, life is a continuous stream carrying "traditions of the race." Literal fact, but traditions are memories, and memory is one of the highest if not the highest attribute of Mind.

"Variations and heredity are fundamental." Exceeding true, but variations occur in animals, not in the cells within, nor granules within the nucleus. Acquired characteristics are not transmitted by any kind of inheritance whatever. Set types, kinds, species remain from the beginning to the end on this planet, as laid down. formulated, by the original mentoid, at the dawn of vitality in the thermal seas of the primeval earth.

Attention is again called to the word nascent, nascor, to be, to become, to be born. Thus Darwin's active and of high potential pangens, are nascent life-germs, directly formed by mentoids. Then nascent electrons in their atomic and interatomic motion, the movement of being born anew and again, from one atom and entering another constitutes the great work of the entire sidereal universe, the whole of matter. To perpetuate a race, the Mind must be carried onward. This is memory, race memory, species memory. Thus a beaver memorizes how all preceding beavers fashioned their huts, and bees their cells. Else each bee must be taught the intricate process anew, and this since the appearance of the first bee, and birds likewise.

"That a cell can carry with it the sum total of the heritage of the species, that it can in the course of a few days or weeks give rise to a mollusk or a man. is the greatest marvel of biological science." Wilson, p. 396. It is the greatest marvel. and one that cannot be explained; nor can any attempt to explain be made by physical science. But Mind science proclaims in tones of convincing. commanding and dominating

force that the chronozoon contains a mentoid, phrenoid, thought-form, plan, model, pattern or design of mollusk in one, and of man in the other. The word chronozoon comes in here with full force. Thus the thought-form was in existence before the evanascent, temporary time-life creature, life-germ or exceedingly minute life-unit. Choronozoons come and go in incessant stream from first on earth to the last, but transmitted mentoids are the only entities inherited, and thus inheritance the mystery of biology is a transmission of Mind. It is the mentoid, the phrenoid, that exists at the base of all evolution, epigenesis, transformation, propagation, transmission from parent to progeny, and mutation. With microscopes at limit of power, a mentoid cannot be seen, nor the subtle Mind pattern. Dinotherium, amœba, lion, bee, ant, elephant, man all have proceeded from totally invisible and therefore undiscoverable mentoids.

To quote again from Professor Wilson, p. 431-2, "We have now arrived at the farthest outpost of cell-research, and here we find ourselves confronted with the same unsolved problems before which the investigators of evolution must halt. For we must now inquire what is the guiding principle of embryological development that correlates its complex phenomena and directs them to a definite end.

However, we conceive the special mechanism of development, we cannot escape the conclusion that the power behind it is involved in the structure of the germ-plasm inherited from foregoing generations. What is the nature of this structure and how has it been acquired? To the first of these questions we have as yet no definite answer. The second question is merely the general problem of evolution stated from the standpoint of the cell theory."

The "guiding principle" in this excerpt is Mind. Inherent in the nature of human thought and speech, for the word principle is a Mind-word. "Directs them to a definite end." This is the supreme truth; for directs implies the existence of a Director. Positively, the only entity in existence having power to direct is Mind. This assertion is based on the actual nature of Mind and of man. To overthrow this statement will be to reverse the entire order of all that part of Nature within reach of huge telescopes and the highest possible power microscopes.

"The power behind, from foregoing generations." Here power is admitted to be from previous generations. But the

power is Mind, the only entity really transmitted. Wilson, p. 432, quotes Huxley: "Development is merely the expansion of a potential organism or 'original preformation,' according to fixed laws." Absolute fact, the original preformation being a mentoid.

But how can the word "merely" be applied to the basic Mind of the Universe, especially when it is manifesting in a chronozoon, the first on earth let us say, that set up development leading to man low, and then to the highest Mind-man?

Merely is the most inappropriate word ever used by Huxley. Professor Wilson, selected here as a very able exponent of biological science to date, says, p. 432: "What lies beyond our reach at present, is to explain the orderly rhythm of development—the co-ordinating power that guides development to its predestined end. We are compelled to refer this power to the inherent organization of the germ, but we neither know nor can we ever conceive what this organization is." I stopped writing a book on astronomy to write this, the present volume. Had the word Mind appeared in this sentence, and in thousands of others, in other books on biology, I would now be at work in astronomy, my original science. To me, it is inconceivable that biologists will print any word rather than the word Mind. I have often been accused of writing metaphysics. I accept. Meta means after or beyond. After physics which treats of matter only; I begin metaphysics. But in the absolute nature of human speech, when matter is analyzed in retort, and spectroscope, dissipated into electrons in Crookes' tubes, and then one electron isolated, when all this is done we reach Mind. Metaphysics, since it comes after physics, is the highest of all the sciences, or above, or beyond all of them combined, including magnificent astronomy, splendid chemistry and fascinating biology. Mentonomy, the law of the Mind, is the highest law; so high that it is a law unto itself. The quoted expression contains the words: "Orderly rhythm, co-ordinating power guides, predestined, inherent and organization." Unless the entire language of man, all words, all thought concretes, are in total error; unless we live in a complete delusion; surrounded on all sides by things absolutely false and deceptive, the words guiding and predestinating are entirely mental in inherent nature. Again, p. 432, "The theory of Roux and Weismann demands for the orderly distribution of the elements of the germ-plasm a prearranged system of forces of absolutely

inconceivable complexity. Hertwig's and De Vries' theory, though apparently simpler, makes no less a demand; for how are we to conceive the power which guides the countless hosts of migrating pangens throughout all the long and complex events of development? The same difficulty confronts us under any theory we can frame."

Two fatal words, "guides" and "prearranged." And "same difficulty in any theory." True to the letter; same difficulty so long as Mind is totally ignored. The cause of all is never mentioned. "Inconceivable complexity" would be at least partially reduced or lessened by the admission of mentoids, thought-forms into the primordial germs, no matter how microscopic they may be.

CAUSED—CREATED—FORMED

Evolution is really the first process succeeding creation. Unfolding, unrolling, enlarging, growing, changing, developing from low to high, advancing, expanding are all words describing evolution. The introduction of the word evolution into literature after the word creating, was an auspicious event. Substitution of the word evolution for creation was disastrous and most be corrected. Creating is producing, evolution is the orderly succession of things due entirely to formation, of objects from created substance. By looking closely into this problem, it will be seen that substance is the only entity that the Creator can create. All later things are formed. And this is literally true in the nature of thought expressed in words. To think a new thought one not thought out before is to create. Unwrapping is a pleasing word to use here, a process of unfolding. Expanding is also beautiful; likewise progressing, especially if the two words eternal progress are combined. But the only entity in being able to expand, unfold, evolve, create, add to itself, increase, develop, change or mutate is Mind. Summon all one's mental powers to think of any other, and failure is inevitable. In the absolute nature of all; Mind is positively the only entity that can think a thought that was not thought out before. And no object can appear without a preceding thought of it. This is a fixed law of Nature. Mental evolution is here and now substituted for material evolution, and the word Direction for Selection. The word mental cannot

be substituted for the word natural, since all is natural. Mind must be natural, since it is the base of Nature. I have no care as to what words are used, no word or combination of words can effect the impregnable fact that Mind is the rock of foundation. The word genesis was used by Aristotle to indicate the beginning of motion from a state of non-existence into existence. This is a good expression indicating the beginning of atoms in the motion imparted to electrons by their Creator—Mind. Thus the Greeks could not speak words of their magnificent language, creative language, without revealing truth; for the words of the Grecians typify or pre-figure, all things discovered by the ablest modern Minds. And this, whether in metaphysics or physics. At least they all go to the languages of ancient Hellas for names of scientific discoveries. Words were created by Mind; so metaphysics can glory in the sentence:—"born of the deep sea of Mind." And of matter, physicists may say: Assembled of electrons. Mind must have formed food for the first plant on earth. It matters not if this bacterium was so small that 100,000 side by side would make a line one inch long; it had to form its own food; or have it provided by some external source. Now here is a problem, whence came food for the first living being on this planet? Spontaneous genesis has been upset by rigid research. How long food existed before the first plant appeared cannot be known; but it either existed before the plant, or both appeared at the same time. Mind is the only entity able to do this wondrous work. When the first animal "differentiated from plants," the food problem had already been settled. It surely is impossible for a plant to live on a mineral diet only. Plants contain minerals, but it has not been shown that they are kept alive by these alone. All that is alive on the earth, all plants, all animals, are formed of protoplasm, an agglomerate of proteins. The resources of synthetical chemistry have been taxed in the artificial production of these highly complex phases of matter, complete in every detail save one, they did not live. These compounds, closely resembling Nature's product, did not enclose nuclei, with life-germs in their centers. The inscrutable mystery—life has not been discovered. And no trace of a hint or suggestion as to what it is has ever entered the Mind expressing in the brain of man.

It has been said that light enables very primitive types of plants such as low algæ to "make organic matter for food from inorganic." The light reflected by some kinds of algæ is bluish-green, blue being the most active, chemically. But light that is reflected is not used; the very color not utilized is the one reflected away. Then ultra-violet, or infra-red radiation, both invisible, are they that aid these plants. And they can grow in the dark, as in caves and cellars. Also in great heat as in the boiling water of natural springs. Artificial protoplasm in contact with mineral matter, even in white light, or in any separated out color in the solar spectrum is totally unable to utilize them in either vegetable or animal growth. Life is absent, no transformation of inorganic to organic sets in; no living atom, no living molecule; this because of absence of nuclei, and the mystic germ within.

"One of the most significant factors in the struggle for existence which is the dominating law in the animal world is the method by which Nature secures the protection of the weaker creatures against the stronger." Darts, spines, quills, poisons, both liquid and gaseous, stingers, fangs. shells, colors like adjacent objects to obscure vision, and the electric shock, together with sheaths, thick hides, dense hair, and enclosing integuments.

"A torpedo about one foot in diameter is capable of producing at will a current of electricity varying from 2 to 10 amperes, with an electromotive force of from 15 to 20 volts, and a 10 candle-power electric lamp being connected with the electric organ emitted a bright flash when the animal was irritated." Sci. Am. Supp. No. 1852, p. 6. These shocks slay enemies, and even horses have been killed by this formidable defensive power. The result is that to this day the weaker have survived along with the stronger. Animated Nature teems with exceedingly weak creatures. From this the weakest species in the entire list, appear to be the fittest.

"Perhaps no single feature of so markedly sets off man from the rest of the animal world as the gift of speech, which he alone possesses. No community of normal human beings be their advance in culture ever so slight, has yet been found, or is ever likely to be found who do not make use of definitely organized spoken language."

"It is indeed one of the paradoxes of linguistic science that some of the most completely organized languages are spoken

by so-called primitive peoples, while on the other hand, not a few languages of relatively simple structure are found among people of considerable advance in culture."

"English words revert back from the present day to a period antedating at any rate, 1500 B. C.; the by-gone speech was as much English as Sanskrit or Greek."

"Are similarities in languages to be explained historically as survivals of features deep-rooted in an earliest form of human speech; or are they to be explained psychologically as due to the existence of inherent mental characteristics that abide regardless of time or race." Dr. Edward Sapir, Pop. Sci. Monthly, July, 1911, p. 45.

There is hope; this appears in a standard physical science magazine. Two words, "psychologically" and "mental," are actually printed. Thus the admission is made by a linguist that Mind has to do with words; and that it "abides regardless of time or race," a sentence that might have been taken bodily out of a mentological magazine.

VARIATION IN DIRECTION

"Pasteur in 1857 discovered the fermentative organism which sours milk and produces lactic acid." This was as it were an entirely new realm in thought. "The half-formed facets of tartaric acid were all turned toward the right, while those of the racemates were half right-handed, and one half-left-handed. A new idea flashed into his mind. Carefully picking apart the two kinds of racemate crystals, he made a solution of each and with anxious mind and throbbing heart, applied the polariscope. The solution of right-handed crystals deflected the beam of light to the right. They were pure tartaric acid. The solution of left-handed crystals deflected the beam to the left. They were a new lævo-tartaric acid. He mixed the solutions in equal proportions. The mixture did not effect the beam. It was racemic acid." This discovery was of great importance, it was the origin of stereo-chemistry. Looking now at the tartaric acid facets, Pasteur's mind took a wider scope. He saw that they were typical of all living things, which present a symetry everywhere, and that they themselves were products of a form of life." Pop. Sci. Mo., June, 1911, p. 11.

This is most remarkable language, crystals products of forms of life. I would substitute, crystals are products of forms of Mind. For life is a product of Mind. Great emphasis is here placed on difference in direction of inclination in between crystals. They were dissolved separately, and light passed through them. But the light was polarized to the right and left. Then,—when the solutions were mixed, the light passed straight through unaffected.

One of the most alluring branches of the comprehensive science of optics, of light, is that of polarized light, where Nature's deep mystery direction and changes thereof, is observed to perfection. The reader would be amply repaid, by studying the wonders of polarity in light. And changes in direction are fundamental in all branches of the production and use of electricity. So important is this fact of variation in direction of flows of force, currents, waves, axes of crystals, lines of molecules, and of radiant energy in general, that no concept of Nature's splendid laws can be had without study of these changes. The entire branch of electrical science,—induction,—is based on mere changes in direction of current. And atoms are developed into at least 88 present known kinds by differences in directions of motions of constituent electrons, combined with numbers and distances.

"Certain bacteria, living at the surface of sugary fluid cause no fermentation because they secure the oxygen which they need from the air. They are aeroboic. But if sunk by accident or otherwise beneath the surface they must either perish or adapt themselves to their new environment, by extracting orxyen from the nearest source of supply—the sugar of the solution." Three great results were due to the arduous studies of Pasteur:

1. All ferments are living organisms.

2. Every variety of fermentation is caused by a special ferment.

3. Neither bacteria, nor any other form of life are spontaneously generated." Pop. Sci. Mo. June, 1911.

"Straube has shown the like cause of ammoniacal fermentation, namely, bacteria." Same.

Now the hypothesis adopted in this volume is that since all kinds of fermentation are caused by set and specific ferments, and these are all alive, all bacteria, there are as many

varieties or species of bacteria living and functioning in the human body as there are life processes. The Greek word "some" should be eliminated; true these very minute bacteria, are all bodies; but they are zoons, living bodies. For instance, spiriozoons, maintain the action of the lungs in breathing and changing characteristics of the blood, cleansing it and purifying. Peptozoons do the incalculable work of digesting. Hepatozoons are liver-workers and builders, sphygmozoons keep the blood in circulation; mentozoons, a flow of thoughts; while marvels in the growing embryo, are wrought by a number of differing kinds of zoons. One of these, somatozoons, plan the body; while the stromatozoons form the covering, the skin and all outer portions, as a blanket, enclosing all, stromatos meaning covering.

Sang's deductions are as follows:

1. "Variations from the typical condition of an existing species do occur."

2. "These deviations are inherited."

3. "By competition the fittest survive."

"Selection merely means that those individuals which leave offspring are not on the average reproductions of their generation; but they differ in some regards from those which do not survive their parents; or, they are not a random sample of the population."

This quotation is inexplicable. I see no reason why individuals leaving offspring are not up to the average. Do not survive, not a random sample are expressions not understood. Any individual taken at random is a sample of the species from beginning to end.

"The diversity of matter results from primordial differences perpetually existing in the very essence of their atoms, and it is these qualities which are manifestations of them." Wurtz.

"The atom is a fact in chemistry, even if it has no existence in any conceivable form."

"Molecules are definite aggregates of atoms."

"An ion is a charged atom, comparable to a minute Leyden jar; an atom carrying a quantity of electricity. They all carry the same charge, and each atom has the same electrical capacity." Alfred Sang, Pop. Sci. Mo., June, 1911.

Thus electrons in flow, apparently as described by the word

"current," i. e., in currents called electricity, have power to disintegrate solids and liquids into their ultimate constituents.

"Anaxagoras saw in the energy of atoms the evidences of mental power. It is quite significant that protoplasmic molecules are very rich in atoms, each molecule of human hoemoglobin contains 1897."

"Aristotle, who dominated the world for 2,000 years, states explicitely that living beings are generated spontaneously from decaying carcasses."

And then Aristotle said: "Industrial work tends to lower the standard of thought." Scientists now work from 10 to 18 hours daily.

Pasteur's discovery in 1857, led the way to the rigid proof many years later that the dictum of Aristotle was absolutely in error. Spontaneous generation has been repeatedly shown to be impossible.

"Of gases, fluids, electricity, magnetism, ozone, things known or things occult, there is nothing in the air conditional to life, **except** the **germs** it carries." Louis Pasteur.

True, and these germs were formed by Mind.

"To say a notion is imprinted on the mind, and at the same time to maintain that the mind is ignorant of it, is to make this impression nothing."

This is a capital error: the mighty law of latency is ignored. The impression on a photographic negative exists before as well as after development. This is a crude comparison, for mental impressions are inconceivably more refined.

LATENT THOUGHTS

The speaking of Hebrew and Greek languages by a child born of English parents when only four years of age, is latency and nascency in perfect example. Strange words were latent in the Mind and Mind was in total ignorance of the fact until they awakened from latency into nascency.

"There is a great deal of difference between an innate law and a law of nature, between a truth originally imprinted in our Minds and a truth which we are ignorant of, but may attain to the knowledge of by the use and due application of our natural faculties." Surely there can be no difference in between innate and natural. Truth originally imprinted, require an imprinting agency; but the only one within the range

of experience, or reason, is Mind, acting on and impressing mind.

"Sensation is the source of our knowledge of external objects, reflection, of our knowledge of external facts." But I am well acquainted with a girl who at the age of four years played difficult selections on a piano. "A man cannot think without perceiving that he thinks." Mathematicians struggle over an equation until the brain refuses to respond to thought and sleep comes on. Upon awakening in the morning, they rise and simply write out the problem in full solution.

"There are two kinds of ideas, some simple and some complex. The Mind, though passive in the formation of simple ideas, is active in the formation of complex ideas. It receives the former, it makes the latter." But the word latent should be substituted for the word passive; and the word creates for the word makes.

"It is not in the power of the most fruitful mind to form a single new simple idea, not taken in by the way of sensation and reflection." But the boy had never heard Greek spoken; nor the girl, the tones she rendered.

"The dominion of man, in this little world of his own understanding, is the same as it is in the great world of visible things, wherein his power, however managed, by art and skill, reaches no farther than to compound and divide the materials that are made to his hand; but can do nothing towards the making the least particle of new matter; or destroying one atom of what is already in being."

Man can and has made hundreds of new chemical compounds, i. e., those not found in nature; and has torn them apart. And he has destroyed atoms as atoms by disrupting them back into primordial electrons and these vanish through walls of solid glass never to be regained. But Man is, so far, unable to assemble electrons into an atom.

"Names of things are apt to excite ideas in us as soon as we hear them." True. nouns establish ideas within the Mind; but so do verbs and all other parts of human speech.

SPECULATIVE PHILOSOPHY

"Substance is nothing but a combination of a certain number of simple ideas, considered as united in one thing. Thus the substance called Sun is nothing but the aggregate of the

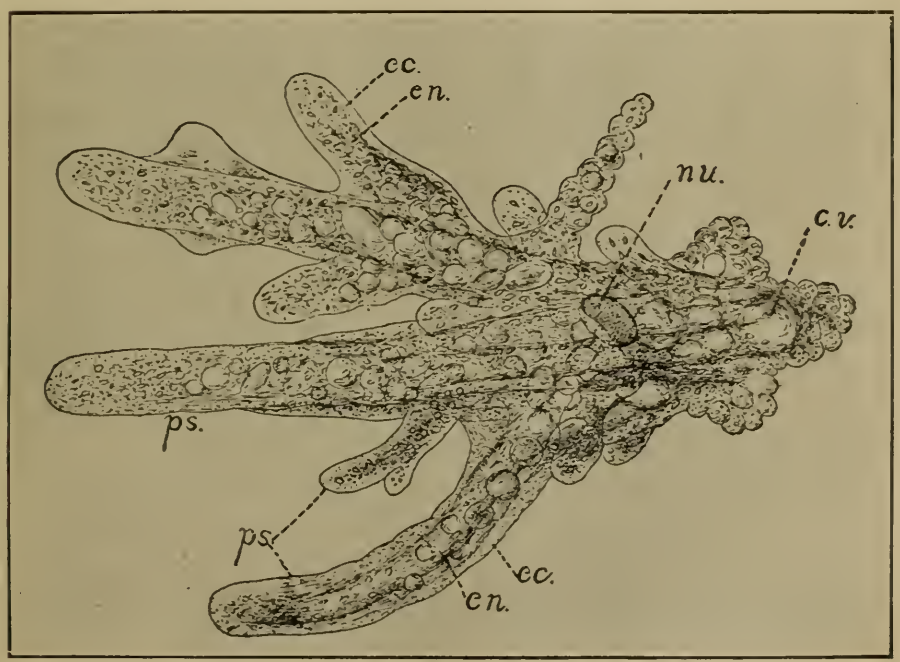


Fig. 1. **Amœba proteus.**—C. v. contratile vacuole; ec., ectosarc; en., endosarc; nu., nucleus; ps., pseudopodia.

ideas of light, heat, roundness and constant regular motion. By substance, the philosophy of the School, and afterward Descartes, imagined an unknown object, which they assumed to be the support (substratum) of such qualities as are capable of producing simple ideas in us, which qualities are commonly called accidents."

What heights and depths of absurdity false philosophy—the above is a literal quotation from a standard book on philosophy, this word being on the back title page, and heading of the page. This substratum is known to be primordial electrons. The sun is not composed of ideas, for it has often been weighed and is known to contain 333,426 times more matter than is contained in the entire earth.

The word plan is here substituted for the word accident. To what desperate straits are they driven who strive to exclude Mind from the sidereal universe.

"The third class of complex ideas expresses relation. The most comprehensive relation wherein all things are concerned is the relation of cause and effect. We get the idea of this by noticing, by means of the senses, the constant vicissitudes of things, and by observing that they owe their existence to the action of some other being."

Literally true, and the word being is never applied to the non-living. When we hear the word being we think in obeyance to an inherent faculty of Mind of a living, mental entity. And we cannot in the nature of Mind think otherwise. The word being actually occurs on the next page containing the word accident. The book grows worse page by page. Thus:

"All things that exist, besides their author, are liable to change." But how change without their author's order? If they do, they are greater than their author.

"Thus, we have the ideas of matter and thinking, but possibly shall never be able to know whether any mere material thing thinks or no; it being impossible for us to discover whether Omnipotency has not given to some systems of matter fitly disposed, a power to perceive and think." Matter does not think; but Mind within living matter does. At least the lowest animals perceive. Thus an amœba, a microscopic sac of living tissue filled with watery protoplasm, somewhat like the white of a hen's egg, perceives the approach of an enemy. Then it makes up its mind to escape, and at once tries to save its life. This book on one page says: "We have

no innate knowledge." And a page, sixteen farther along reads: "We have an intuitive and immediate knowledge of our own existence."

"Outside of us exist solidity, extension, figure, and motion as primary qualities, or such as inhere in the bodies themselves. The substance of bodies is identical with the sum of these qualities." But substance is composed entirely of electrons. Matter is not the sum of its qualities, but of its atoms, and these of electrons, with their motions of revolutions in multiple directions at varying distances at set and absolutely set specific speed for each phase of matter usually called an element.

"Real substance is a combination of qualities." False, substance is a separation of electrons. Matter possesses combinations of qualities.

"Existence consists in perceiving or being perceived." Very true, perceiving is a very high mental process.

"The words sensible thing and idea are synonymous." The word idea, from Greek idein means to see. The word see here means mental vision. Thus the Mind is able to see images. A totally blind person possesses high ideation and delights in thinking forms or images. The dictionary definition of idea is "the transcript, image, or picture of a visible object, that is formed by the Mind." Sensible thing and idea are not synonymous, for any sensible thing is an object cognizable by our senses. An object is an idea, i. e., mentoid, phrenoid or thought-form filled out or expressed in matter. But the following is the sunken depth of human absurdity: "Our ideas, or the things we perceive, are visibly inactive. It is impossible for an idea to do anything, or to be the cause of anything." This astounding statement contains 27 words. Could any other set of 27 words be combined into a more intense error? Our ideas are intensely active. The only entity in existence that can do anything is an idea,—a thought-form. The only cause of the existence of anything is an idea form first appearing in Mind. The resources of human language were taxed to form this absurd combine of 27 words.

The pages of works on "philosophy"; why called philosophy is a perennial and inexplicable enigma, teem with such expressions as these:

"All our ideas, without exception, are derived from the senses, and especially from touch."

Still worse, highly condensed, only 14 words. Books, wondrous poems, literary gems, paintings, drawings, the height of artistic conceptions, abstruse mathematical problems, legal decisions and other exalted mental works, have been wrought out in deep sleep. Within recent years an entire literature has appeared written by mentalists teaching that if one wishes to do severe mental labor to go into a place where silence reigns; where at least one sense is cut away—hearing. I must be pardoned for obtruding personal matters into this writing. I write in a large astronomical observatory situated on a mountain peak. It is surrounded by other summits rising above the clouds, Deep canyons yawn on either side; and no humans are near. From midnight until the first blush of advancing dawn is indeed a time of silence. No combination of words at my command is able to convey any impression to the reader's mind of absolute silence, solitude and stillness. The intense quietude of a distant mountain midnight, must be experienced to secure any mental concept of solitude. Not one night, but many must be lived on a high peak to realize the true meaning of the word silent. Positively, unless experienced, the reader cannot even think of total absence of sound. Nor of its wonderful influence on the Mind. Nor of the simply incredible stillness that reigns in the mountains. Wait until a mighty cloud settles down upon the peak and descends still lower to the bottoms of the huge canyons. Then turn out the electric lights. Two senses of man are dispensed with. Does the reader, know what absolute silence combined with total darkness mean? There is no odor, three are obliterated. With no substance, on the tongue, another is extinguished. By remaining still the sense of feeling is scarcely apparent. Then seeing, hearing, smelling, and tasting are not in any use whatever, and the sense of feeling is almost gone. Now I assert and state from eleven years' experience up here, that the Mind is far more active than when the bodily senses are in full action. Indeed! the Mind is more awake, active, sensitive and alert at midnight than at noon, when sounds and light are at a maximum. Judgment, perception, discrimination, discernment, selection, assorting, rejecting, and all high mental faculties are far more acute in absence of the physical senses than when they are asserting sway. Ideas, especially mathematical and scientific, at times deep within the negative side of nature—night, come in at rates so rapid that the flow

may be aptly called racing of the Mind. A most astonishing thing occurs in some instances, the Will itself is held in abeyance by some other Mind-power—that is, thoughts on one subject or on one line will dominate all others, even the monarch of the Mind—the Will. Therefore, the most rapid succession of ideas come on apace when the senses are not in use. The 14 words are so completely obsolete that they should not be allowed fossil room in mentological museums. One philosopher "granted that matter can think." Electrons, substance whence all matter is formed, cannot think, they have no activity, they are directed, by the only entity capable of directing, Mind. Thus Mind is incapable of thinking of any kind of director but Mind. Another philosopher said: "Compounds cannot think, consequently the subject of sensation cannot be corporeal in its nature." Another 14 words. Same philosopher later: "The movements of the body are, accordingly, merely occasional causes of mental phenomena." Price of book, $1.50 cloth, leather $2.00; should be $2.50, for it contains this sentence: "Moreover, it is not certain that the body is an extended substance. But even if there were no real extension, that would not be a sufficient reason for denying the existence of bodies." Certainly not of mentoids, thought-forms or thought-bodies. "At all events, there is something other than ourselves; this cannot be doubted." I suppose this means other than our mental selves; for that there are other physical things is self-evident. Other than our mental selves I would name the Creator-Mind.

"All substances are bodies." Should read all substance consists of electrons.

"Matter is endowed with force," ought to be evoluted or mutated to matter is directed by Mind.

Finally: "The belief in the objective and absolute existence of bodies persisted." 'Twas well; bodies are the only objects that can exist.

"The mental world depends on the physical world" should be mutated to: the physical world depends on the mental world.

"Matter is an active substance, that is, force." This should read: Matter is directed substance, electrons; and the force is Mind.

"Matter is originally and necessarily active, and hence does not receive its motion from without." Then a clock can wind itself.

"Experience, advanced the cause of materialism by its emphatic declaration that body acts on mind, and that the mental world depends on the physical world." Then Mind, an entity so far greater in Majesty, than all else beside, so great as to be one by itself, above and beyond all, becomes the latest, the very last to appear within the entire universe. This idea, if it be worthy of being called an idea is repugnant, repulsive and abhorrent to all that is really exalted in human beings.

"Matter is extended substance" should read: "Matter is concentrated electrons."

"Matter is an active substance, that is, force" should be: The quantity of electrons is the directed substance, directed by Mind; not force, unless the term Mind-force is allowable. But the better way is not to even attempt to combine any word with the word Mind.

"Extension, impenetrability, and action, are three distinct notions, but not three different things; they are simply three different modes of conceiving one and the same matter." How three words having such diverse meanings can be applied to the solution of the same question is a mystery—[eyes closed.]

We now know that if matter is greatly extended, it reverts back to electrons. Impenetrability, a word venerable owing to long use in university text books, should not only be omitted for all coming time; but taken out of the dictionary and put over into the rear in the department of fossil words. Electricity at high pressure in Crookes' tubes penetrates all matter whatever, tears to atoms, and then penetrates these long thought to be impenetrable things and disrupts them instantly into their electrons. Of course, the word force is not a thing. Nor are electrons things; objects composed of electrons, atoms and molecules are things.

"Matter is merely the theatre and the means, the source of action." The word not, should be inserted between the words "means" and "the."

During the last thirty years the theory of organic descent has been shown by an overwhelming mass of evidence, to be the only tenable conception of the origin of diverse living forms, however we may conceive the causes of the process.

The study of microscopical anatomy has shown us the nature

of the material on which it has operated, demonstrating that the obvious characters of plants and animals are but varying expressions of subtle interior organization common to all. In the higher forms of life, whether plants or animals, the body may be resolved into a vast host of minute structural units known as cells, out of which, directly or indirectly, every part is built, even the skin, blood, bones and muscle and tissue. Cells endlessly diversified in the details of their forms and structure, these protoplasmic masses nevertheless possess a characteristic type of organization common to them all; hence, in a certain sense, they may be regarded as elementary organic units out of which the body is compounded, true only of the higher forms of life. Among the lowest forms at the base of the series are an immense number of microscopic plants and animals, bacteria, diatoms, rhizopods, and infusoria, in which the entire body consists of a single cell. The general problems of embryology, heredity, and evolution are indissolubly bound up with those of cell-structure, and can only be fully apprehended in the light of cytology. As the most significant step in this direction, we may regard the identification of the cell-nucleus as the vehicle of inheritance. In Huxley's words, the germ is simply a detached living portion of the substance of a preexisting living body carrying with it a definite structural organization characteristic of the species.

Development is not a mere process of unfolding, but involves the continual formation one after another of new parts, previously non-existent as such, and researches established this conclusion as the very foundation of embryological science. The egg is a cell having the same essential structure as other cells of the body, the wonderful truth became manifest that a single cell may contain within its microscopic compass the sum total of the heritage of the species. This conclusion first reached in the case of the female sex was soon afterward extended to the male as well, each spermatozoon contains not only a nucleus, but also cytoplasm. Each sex contributes a single cell of its own body, and the sexes play an equal though not identical parts in hereditary transmission. The ultimate problems of sex, fertilization, inheritance, and development are shown to be cell-problems. Every cell is the offspring of a pre-existing parent-cell, and at the present day this conclusion rests upon a foundation so firm that we are justified in regarding it as a universal law of development. The first

step in development consists in the division of the egg into two parts, each of which is a cell, like the egg itself. The two then divide in turn to form four, eight, sixteen and so on until step by step the egg has split up into the multitude of cells which build the body of the embyro, and finally of the adult. This process is cleavage or segmentation. But cleavage as a process of cell-division was followed by the demonstration that cell-division does not begin with cleavage, but can be traced back into the foregoing generation; for the egg-cell, as well as the sperm-cell, arises by the division of a cell pre-existing in the parent body. It is therefore derived by direct descent from an egg-cell of the foregoing generation, and so on ad infinitum, an uninterrupted series of cell-divisions extending backward from existing plants and animals to that remote and unknown period when vital organization assmed its present form. Life is a continuous stream; germ cells live on, carrying with them, as it were, the traditions of the race from which they have sprung, and handing them on to their descendants. All theories of evolution take the facts of variation and heredity as fundamental postulates, for it is by variation that new characters arise and by heredity that they are perpetuated.

Darwin recognized two kinds of variation, both of which, being inherited and maintained through the conserving action of natural selection, might give rise to a permanent transformation of species. The first of these includes congenital or inborn variations, i. e., such as appear at birth or are developed "spontaneously," without discoverable connection with the activities of the organism itself, or the direct effect of the environment upon it, though Darwin clearly recognized the fact that even such variations must indirectly be due to changed conditions acting upon parental organism or the germ. In a second class of variations were placed the so-called acquired characters, i. e., definite effects directly produced in the course of the individual life as the result of use and disuse, or of food, climate and the like. The inheritance of congenital characters is now universally admitted, but it is otherwise with acquired characters. The inheritance of the latter is now the most debated question of biology, Darwin recognizing that the transmission of acquired characters can only be possible under the assumption that the germ-cell definitely reacts to all other cells of the body in such wise as to register the changes taking place in them." Wilson.

This last sentence including the word "register" is one of the most important in the literature of biology. This word register led Darwin to his highly complex hypothesis of pangenesis, all-genesis, all generation. The definition in full is: Pangenesis, 1. Origin from all parts of the body; the theory of heredity advocated by Darwin. Darwin assumed that gemmules or infinitely minute granules derived from all parts of the body circulate through the body and eventually settle down in the germ-cells. The gemmules having the power of reproducing the cells from which they are derived, enable the bud or germ-cell to develop into a complete individual. Some of the gemmules may remain dormant for several generations. 2. Origin from pangenes. 3. The theory that every organism originates in a simple pangen. Derived from pan, all, plus genesis, origin, from gignomai, or ginamai, to be, to become, to be born, to be begotten, be made, to happen, occur, come to pass. Genesis seems to have been derived from gao, by changing into eino, Standard Dictionary and Greek Lexicon.

Pangenes, Biol. One of the minute vital particles that according to De Vries, compose the hereditary substance, are capable of growth and multiplication by fission, and are the bearers of the individual qualities of the cells.

The reader is already well aware that all this elaborate complex may be reduced to phrenoids, mentoids, or thought-forms. The words "infinitely small" in the definition, are too comprehensive: electrons only are anywhere near the wonderful state of being infinitely small. The use of these two words inevitably leads to the doctrine that no entity exists in electrons but life. No mention is made of Mind. Then nothing exists but life. Then phrenoids and mentoids vanish, while zooids, zooiforms succeed. No, indeed, electrons are not alive, nor atoms, nor molecules until assembled into the first unit, the first chronozoon. The exact English for this word in Greek, is time-life. And chroneo, means to live. To me, the word chroneo is simply astonishing, one opening up vast fields and areas for research into the very foundations of mentonomy. For chronos means time, and time only with no other meaning. But chroneo, os, or eo, means to live. This is beyond comparison for amazement. Thus it would seem that time applies not merely to the rotation of the earth on its axis, but to the fact that life exists to sense this motion, by becoming aware

of the rising and setting of sun and stars. Intricacies within the Mind Maze are now beyond all hope of exploration. These ten words are unfathomable, a door is reached and it will not open. Chronos is a noun, while chroneo is a verb. We live time. This is a physical, metaphysical and transcendental deep; one at the bottom of the labyrinth so it appears, but beyond all doubt there are illimitable corridors beyond or below, or above, for these researches are leading into heights and depths.

Pangenes of De Vries become phrenoids. Pangenesis of Darwin becomes mentogenesis or phrenogenesis. The ultimate nucleus in a spermatozoon has not registered the nature, impulse, property or attribute of all of the other millions in the adult body of the male: nor the ultimate nucleus in the ovum of the female. Nuclei cannot register, sense, become aware, or know, but phrenoids, mentoids, thought-forms can and do. Then reproduction is mental not merely mechanical, or even chemical. And this from the inherent nature of thought. For registering, forming, building, assembling are all mental, or Mind-terms. And cannot be otherwise from the very nature of all existing entities, Mind. life, man, language. But Mind-forms make use of the usual physical and chemical means of reproducing.

CLUES TO THE NATURE OF MAN

The brain in a human embryo is formed first. The beginning of a human is beyond the power of any microscope to reveal. Mind originates a mentoid or thought-form that is predestined to become a mentozoon or chronozoon in the brain. This mental pattern is filled out with still smaller bodies, all living. This process is repeated millions of times and the result is the brain. A "brain-cell," a mentozoon, therefore, is composed of ultimate, absolute, units of life and these are the material instruments used by Mind. They are units containing life. They are all spheres and are of different sizes; but no microscope now made, or that can hereafter be made, can reveal these inconceivably small objects. These are assembled by a Master Mind into the tissues and structure of the brain. Whatever may be the result of the union of germ and ovum, the beginning of an individual; whatever kind of animal; or whatever type, phase, kind, or quality

of man may develop, all these depend entirely on phases, variations, or differences in attributes and qualities manifested by the Mind engaged in formation of the embryonic brain. For Mind includes mentoids of every entity that has or ever will exist. Thus clues to personality can only be discovered by watching like a detective for some unguarded opening or avenue of approach that may possibly reveal a slight phase of Mind.

Man is complex beyond all present hope of imagining. He certainly is an epitome, a macro as well as microcosm. He is all, everything, space, time, infinity, the infinitely great and an infinitesimal. The Mind phasing as human includes all or is capable of this comprehensive inclusion. For Mind expressing in the mathematical phase in the brain of a mighty mathematician is able to so expand that it can search, explore, discover, differentiate, equate, analyze and integrate into all heights and depths of infinitude. This is known to be true, because the equations themselves are infinite. A mathematician deduces these tremendous equations, solves them and then stands in awe before his own work. But after the equation that weighs the stellar Universe is solved, then the mathematician does not know who or what he is. Suppose that one of these men should say: "I made up my Mind to write out that equation," and a friend hearing this should ask, "Who is the 'I' that made up your Mind?" Then the great mathematician would be obliged to say: "I do not know." So, what shall I gain by continuing to write under the head: searching for clues to the human personality? Still I feel impressed to write a few more pages along this alluring and intensely fascinating line of exploration.

All mentoids destined to be filled out as mentozoons, in sufficient numbers to constitute the human brain, having been completed by the assembling of the inconceivably small spherical living bodies, look forward to the consumation of the one great event—birth of a human being, a depository of Mind, a personality.

The next chronozoons to be formed by filling out mentoids issued by the Mind of the Master Builder, are the amazing sphygmozoons, the heart-beaters. Division of labor among the chronozoons is rapidly established at once, mentozoons are formed by filling out mentoids in the brain matter. One of the important grand divisions of workers are

those destined to keep the heart beating from the first beat in the embryo to birth and thence through the entire human life to old age and death—it may be a century later. Thus in the very early embryo there are formed in the tissues derived from the mother's plasma, mentozoons in the brain and sphygmozoons in the growing body whose enormous work is to maintain heartbearts, and a circulation of the blood from the beginning of life to the end of days. These are active workers, and the amount of energy expended has been computed to the astonishment of the computers.

As time draws on apace, each moment occupied in the growing embryo in excessively active work, wrought by millions of chronozoons, the filled out mentoids, the auspicious event of birth into the air is approached. New phases of mentoids are sent, these are filled with the invisible spheres, living spheres, and the completed beings are spiriozoons, lung-workers. Their labor is to keep the lungs expanding and contracting, from the first inspiration of air at birth, when the first cry of man is heard; until the last expiration at the closing scene of a human life. The colossal work of spiriozoons during a long life is second only to the toil of the sphygmozoons. Mentoids in manifesting as material workers in many types and kinds are indeed active in embryos. Young life is intense. But the marshalling of the hosts of spiriozoons for work in the lungs at instant of birth is described by two words only, the action of a Master Mind.

"How can one arise from the many?" It cannot, the one manifests as many; for the personality expressing in the human brain has more aspects, properties or qualities than are yet dreamed of in any philosophy—many of them being latent.

"Evolution is wholly mechanical. Nature, with its five or six essential properties, such as potential and active force, length, breadth, depth, impenetrability, and sensibility, which exists potentially in the inert molecule, and matter, suffices to explain the world. We should not search for designs (intentions) where there are only accidental facts." And this has passed for philosophy and is now believed by some. The counting of chronozoons in living nuclei, with precision from the first one on earth to the last, thus maintaining continuity, an accident? This is impenetrable indeed; likewise how can a molecule be inert if it stores potential?

"Nothing, at first view, seems more unbounded than thought, but a nearer examination shows that it is really confined within very narrow limits, and that it amounts to no more than the faculty of compounding, transposing, argumenting or diminishing the materials afforded by the senses and experience." This has been in literature for more than 100 years. "Mind confined within very narrow limits!" It is the only entity not confined in limits; the only boundless, illimitable and infinite. "Amounts to no more than the faculty of compounding and transposing!" But these two stamp Mind with the very attributes of Infinity. Compounding, transposing, rearranging is the height of attainment yet reached by Mind now functioning in the brain. For transposition of a complex mathematical equation is the most difficult work ever engaged in by man. Combining a series of facts acquired during centuries of arduous labor of astronomers into the most intricate equations, has ever been considered the highest achievement of Mind in man. The reader may imagine that he has wrought great and tiresome labor of both Mind and body. True, he may have; but unless he has computed the distances of the stars and weighed them, all his labor falls short of what has been accomplished, by his brethren. Likewise the computation of the orbits of comets; and prediction of their return, both as to position in relation to the earth and sun, and accurate time and distance of nearest approach to both. And this after the flying mysteries have been sunk for a hundred years in space deeps invisible in any telescope; but visible all the time in the far more acute eye, the imperturbable eye of mathematics. "Amounts to nothing more than transposing." Exceedingly true so far as man's career on earth; he has done nothing higher than forming, transposing and solving formidible differential equations. Mind manifesting in man has passed within infinite chambers, corridors, rooms, and labyrinths within the Maze. It is known that the realms traversed were infinite because infinite series of equations were first deduced and then solved. It is the very nature of excessively high mathematics, to become aware that it is exploring infinite regions because the equations themselves are infinite. No fascination is more enticing, alluring and pleasing, than an exceedingly complex series of differentiation and integration; not even the high type fascination of poetry and painting. The very

type, letters, formulas, and symbols on a page in a book on calculus are all as trancendently beautiful as are the lovely petals of roses, carnations, poinsettias and heliotropes; and more splendid than literary diamonds embedded in the world's most exquisite poems and literary gems. Really, since mathematics is infinite, man has nothing more.

"We esteem it worthy of the labor of a philosopher to give us a true system of the planets, and adjust the position and order of those remote bodies. How much more highly should we value those who, with so much success, deliniate the parts of the Mind, in which we are so intimately concerned!"

And this was written by the same man who wrote: "Mind is really confined within very narrow limits and amounts to no more than the faculty of transposing." Surely this writer could not have been aware of the existence of differentials and integrals. True it were more exalted to find the facts of Mind than to tell the distances of the planets.

See this amazing statement by the same author: "A blind man can form no notion of colors; a deaf man of sounds." Of course not, they do not exist for these unfortunate men. And this: "All ideas, compared to sensations, are naturally faint and obscure."

Brilliant and exalted ideas, born in sublime flights of ideation, are so much more wonderful than are the mere physical sensations whence they are derived, that the two are scarcely compared. Some poet became aware of this fact and then wrote three words: "Pleasures of memory." Introspection mentioned on preceding pages in this volume is most pleasing. "All ideas naturally faint and obscure" ought to be put over into the index of the book: "The Anatomy of Melancholy."

"All our ideas are derived from sensation." Wonder if the unutterable hights and depths of integral calculus were all derived from sensation? Absence from all possible sensation, in a totally dark and silent room, is an ideal place for the handling of integrals. Thus a second grade mathematician if of sufficient Mind-power, could become one of the first, if deprived of seeing, hearing, smelling, tasting and then be paralyzed in bodily sensation so that feeling almost vanishes, providing the Mind be left clear. For a second grade mathematician has mental resources capable of expansion into the grade of first by continued concentration and intro-

spection. In fact a young man totally blind did study out the calculus unaided by any mathematician.

"Experimental reasoning itself, which we possess in common with beasts, is nothing but a species of instinct or mechanical power that acts in us unknown to ourselves." Substitute mental for mechanical and emphasize the word unknown. This unknown power is Mind.

The introduction of references to the hights of mathematics into a book treating of creation, and evolution may appear strange; but mathematical expansion is creation. Thus one intricate formula makes the appearance of another absolutely necessary. When fully deduced, and then solved, the act is surely one of Mind creation. Creation by processes of evolution if one wishes to use such an expression, unfolding, expanding, and widening, for mathematics conquers all numbers, differences, infinitesimals and then integrates, in between limits, from zero even to infinity.

The word understanding has never been defined in all of its refined phases of meaning. Electrons, stand under, exist before matter appears and disappears. But what stands under the portions of Mind now functioning in the mentozoons or chronozoons in the human brain? Whatever it is: "It is both receptive and active; it receives a mysterious substance from without, and makes an intuition of it. Hence, there are, in every intuition, two elements: a pure or **a priori** element, and an **a posteriori** element, form and matter, something that reason produces spontaneously and something, I know not what, derived elsewhere." This was written by one of the greatest philosophers of all ages. The highly impressive words "receives" and "derived elsewhere" are in this highly imoprtant sentence. That is: the Mind in human manifestation receives and derives from Mind, the original source of all mentation whatever. No word in human speech can be applied: the word Mind must be spoken and written entirely alone—Mind. The "something I know not what," positively is Mind. This is inevitable because the quotation deals entirely with Mind for the word intuition appears twice and the word reason once. The words receives, makes, and produces also appear in this remarkable sentence. Wonderful, because one of the ablest Minds arrived at a place within the Maze where the necessity of receiving from without developed in great force; with power to cause this mighty

writer to admit the need of receiving from without. It is scarcely necessary to say that this author is Kant. Further: "These **a priori** intuitions, which sensationalism denies, and whose existence the Critique of Pure Reason proves, are **space,** the form of the outer sense, and **time,** the form of the inner sense." The fountains of the great Mind-deep are here opened—Space—Mind and chronozoons. Thus Mind existed in space before electrons, and in the far later brain of man in ephemera appropriately named chronozoons, time-beings. Eternal Being and time-beings. Thus a longer or shorter continuity of these time-lives, time-thoughts, constitutes a human life, a succession of short lives and thoughts. But thoughts can be reduced to enduring spoken words, or to writing even on stone, for purposes of perpetuation and accumulation. Would that Kant had conceived that Mind saturated space before electrons and time.

"Ignoring the real world;" "Marking clearly the limits of capacity of human comprehension;" "We have no innate knowledge;" "Matter is a confused idea;" "Matter and motion: these two words sum up everthing." "The mechanical theory sufficiently explains all." "Eyes were not made **for** seeing, nor feet **for** walking." "Thought is the function of the brain, as digestion is the function of the stomach;" "The impressions reaching the brain cause it to act, just as food introduced into the stomach sets that organ in motion." "Matter can think;" "Mind is subject to the laws of Nature;" "There are no bodies;" "I did it myself;" "He did it himself."

"There is ignorance of reality;" "Innate metaphysical truth;" "He that invented printing or etching had an idea of it in his Mind before the invention existed;" "The Master Artist;" "The Supreme Architect;" "Our ideas of external objects,—the idea of a tree, for example,—consists of parts, like their objects;" "It is inconceivable that an inextended entity—a simple mathematical point—should contain an infinite number of ideas, feelings and volitions;" "Matter is moved by motives, reasons, and arguments;" "We must seriously inquire into the matter of human understanding."—Quotations at random.

THE SCIENCE OF SALVATION

The saying: "We must be saved," is a truth as solid as the rocks. But we must be saved from ourselves. A mentalist of long experience in studies of Mind may find food for thought in this short sentence. There are many millions of books in the world on the subject of salvation. Ninety per centum of the contents of all these works is now entirely obsolete, and petrified into rigid fossils.

Salvation is a science. Mathematics is the only absolutely perfect science; but all scholars throughout the world ought now to join in one mighty and concentrated and definitive plan to make salvation a set and fixed science so nearly perfect that mathematics only, is of greater accuracy. Would be as precise as the science of numbers were the factors numbers only, but these are all human, and intensely human. Saved from self. This would be as easy as addition and subtraction if we knew all about ourselves. We know as little about ourselves at present as we do of the opposite side of the moon which is always turned away from the earth. Thus as it were the face of one's ownself is turned away. No fact in mentonomy is more apparent than that within each human personality there are two forces, powers, states or conditions. One seeks to rise higher and higher toward perfection; the other in the opposite way, toward a lower and lower grade or state. One leads to all that can be sensed as happiness here in bodies, brains and personalities on earth; and the other to an equal degree of unhappiness. One leads to mental pain, the other to mental happiness. And likewise physical. This is the first time that the most enigmatical word in any language—pain—has been written in this book. This gigantic subject cannot be discussed in this volume. I have used a most astonishing phrase: we must be saved from ourselves. One must be saved from one's self. This is a literal fact as obscure and inexplicable it may be. I admit that I cannot understand this mystery, but the mystery is a fact as obdurate and rigid as is the fact that gravitation causes bodies to fall to the ground. It has been vehemently disputed that we must be saved. Thus it has been told us that we can live along the "even tenor of our ways" from birth to death. But the "even tenor" is not a progression. If the theory of evolution is true; and the right theory is

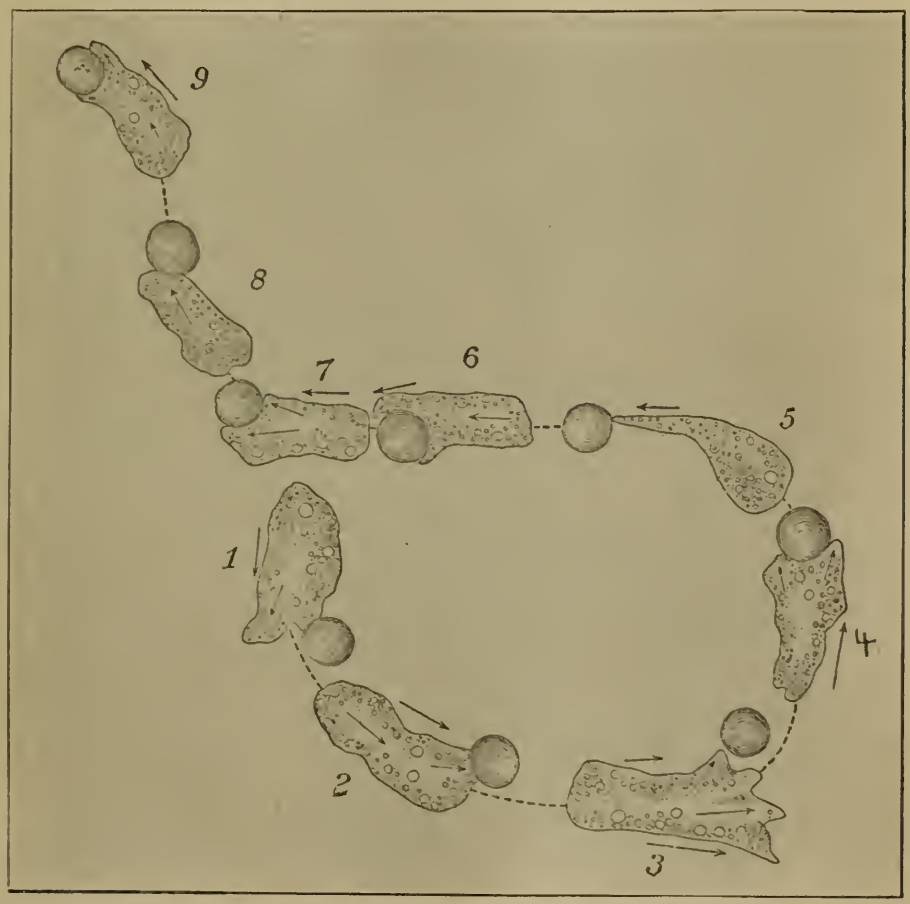


Fig. 2. **Amœba**—following a rolling Euglena cyst. The figures 1-9 show successive position of the Amœba and cyst.

true; then man evolves, or rather is evolved, mentally into higher and higher states. This subject is one of the most profound in the entire career of man. Mentalists from remote antiquity until now, have thought, pondered, philosophized and written upon this fascinating theme. Mentological battles, wars of words, have raged for centuries, striving to decide whether we have aught to do here. Writers have taught us that we are precisely as Nature made us; that we are living just as we are and ever have been; exactly according to our inherent natures. This book takes the opposite side of this stupendous question: and holds to the view that an incredible amount of work has been left on our Minds and hands. The legacy of labor resting upon man is to conquer himself and the entire earth. His herculean labors are to annihilate war, alcohol, disease, poverty, crime, pain, insantiy, idiocy, poisons, deadly serpents, deadly bacteria and insects, and harmful plants and animals.

To drain all swamps, fill every marsh, bog, morass and end death dealing exhalations. Harness rivers, winds, tides and solar energy to servitude in the production of electricity; and to use this now unknown agent to turn every wheel, do all work, in shop, factory and transport by land, water or air. To wire the planet, turn on the electric light and transform the night, or negative side of nature into day. To make mankind of one speech, by use of wireless or space-transmission of human intelligence in spoken, written or automatically printed words. This so that when one anywhere on earth hears a word, he will know its meaning. To end the hideous sex-perversion now reigning everywhere and sale of women for gold. Also the appalling and corroding Mind-disease gold-leprosy, insane clutch of wealth, and terrific horrors heaped on children for the love of gold. This formidable catalog of work is perhaps half; the other half is named Eugenics, human culture. This science is looming now in magnificence. The original idea of human betterment was derived from the betterment problems applied to swine and cattle. This colossal subject likewise cannot be written up in this book. The reader perhaps will agree to the proposition that man must be saved and saved from himself. Or saved from the sinister and forbidding other half of the personality. Man must save himself from sex-horrors, society-inanities, war, alcohol and gold, and that in a not far distant

future, or retrograde. Mentonomy only is able to save. Positively, Mind must be explored and its real nature discovered, disclosed and then these facts, simply must be utilized. This work is what has for long been posing, as errors attached to the fearfully misused word salvation. The entire work must be done by ourselves, there is none to aid.

Thus labors greater than those wrought by Hercules and a million more like him, will be that of examining, searching, and understanding, the now obscure, hidden and latent, faculties of Mind, bringing them into the light of human science and applying them—the reader may be surprised in a totally new science—education. And this mighty subject must here be passed. Thus salvation, in one of its general departments is actually to save children from themselves, lower natures, or other halves of personalities. And labors beyond all imagination must be wrought in the conservation of adults; for nine-tenths of all grown human beings living in nations—organized governments, are now unhappy. Poverty, grind of disease, ruinous taxes for senseless wars, the lame, halt, blind, deaf, misshapen, monsters, those in jails, penitentiaries, asylums for the insane with nameless horrors, for the idiotic and the dreadful poor. An army of laborers along reformatory ways will be required to assuage the appalling terrors endured by the unhappily married; those forced to study in schools utterly repulsive subjects, those forced to labor all through their lives at employments that their natures loathe; living near malignant neighbors; lifetime longings never satisfied, not wanted children, divorce horrors, court horrors, hospital horrors and a thousand others from mildest to total malignancy, harass, wear out, and trouble-toss nine out of every ten persons in civilized countries. Eugenics and mentonomy would wipe out the entire hideous and appalling mass within one hundred years. Then the present modes of existence make it clear that to these persons —"lives are not worth the living"—a solid truth. Persons have longed themselves to death, hoping and desiring books, pictures, music, culture and good things of this world—hopelessly unattainable from poverty. Heartbreaking disappointment, merciless crushing of hope, aspiration, high ideals, and these in refined, sensitive and appreciative ones—these, and more like them, slay their thousands annually. All avoidable by a knowledge of our mental natures and applica-

tion of this knowledge. Page after page of atrocious horrors could be scribbled, but recounting of these would be useless; they, and diseases of Mind, brain, nerves, and body can, nearly all be eliminated from humanity by continued research in mentonomy. And terrific pre-natal horrors owing to tortured Minds of prospective mothers, cast shades of gloom over offspring through life. Entirely annihilated by a civilization based on mentonomy. The entire legal fraternity and procedure of criminal courts will be almost reversed when mentonomy is taught in schools, academies and universities. And current civilization likewise. This is salvation of the individual, of nations, of the race; the saving process being based on newly discovered, and now semi-latent laws of Mind. We are mental beings, not merely physical. For war with fiendish selection, selects the strongest, murders them on the battlefield, leaving the low grades to propagate the species homo. The capital discovery of all ages will be the discovery of the nature of personality.

MIND

Mind is an entity entirely by itself, totally different from all others known; so different that it cannot be compared to any other within range of human experience. Its nature is unknown, likewise what it is. All that can be done in the present state of mentonomy is to observe some of the effects of its operations. The perplexing question arises, does Mind itself evolve and mutate. Is this process if it exists, continuous like a line drawn with a pen constantly touching the paper; or a line drawn with pen lifted and placed down alternately, thus making a row of dots or dashes? Does the part of Mind expressing in the brain of Edison when inventing—creating?—act continuously, or are there slight intervals? If intervals exist, is the next succeeding thought different from the last preceding? Is each thought in a series derived from the last preceding or all former thoughts on the same subject? In that marvelous product of Mind, the differential calculus, there exists a flux and flow, a continuity which I wish to apply as a comparison to a flowing Mind. Uninterrupted continuous mentation: can this be? Ink flowing from a pen drawn across paper is taken to be continuous. Are thoughts thus continuous? And of this flowing kind when a great inventor is studying out, cre-

ating, evolving, an entirely new invention? Evolution is Latin evolutus, pp. of evolvo, unroll, e, out, volvo, roll. Is the rolling continuous until the product of evolution is completed? Or, are halts made, and after a period of quiescence, it matters not how short, nor how long, the motion again sets in?

Mutation, is Latin, mutatio (n), mutatus, pps., muto, change, freq. of moveo, move.

One motion is rolling, the other mere moving without specifying the kind of movement. The results of both are changes. Vast problems come stealing in here all unawares. See this question in mathematics, the great branch, differential calculus, the calculus of variation. A continuous or progressive variation is a variation wherein the difference between any two consecutive states or conditions is less than any assignable quantity. The names assigned to these minute quantities, or differences, are infinitesimals or differentials. These lie at the base of the greatest achievement of Mind in man, the calculus. In this book, the reader is requested to observe that whenever the word evolution is used this specific meaning is ascribed to it, namely, continuous flow: the difference between two successive states of anything whatever that is evolving, or being evolved, is so excessively small that it is smaller than any assignable magnitude or dimension. Look at this matter in the case of ink issuing from a pen; then the words differential and infinitesimal would be represented by a distance equal or less, separating any two consecutive molecules or particles of carbon in the ink. And in this work, the specific sense attributed to the word mutation is that of an interrupted motion comparable precisely to dots separated by intervals short or long, it matters not, the one condition being that the line be not broken until mutation has finished its work in a completed product or result. Continuity, continuous evolution, is simply merging, whether slow or rapid. But the term merging cannot be applied to mutation. It may not be discovered whether evolution or mutation has been the method of progress from electron to sun; or from protista to man. For no microscope yet made is able to make sufficiently refined exploration in electrons and atoms; nor still greater penetration into the interiors of nuclei in organic cells. For it is in these exceedingly small life-units, ultra-microscopic nuclei, that evolution or mutation obtains So far, these first steps of evolution or mutation are beyond the vision of the eye of man aided by the most powerful ultra-

violet-light microscopes. Therefore, naturalists at present cannot decide which process to adopt, if both exist, or decide whether two or one has been the order of nature. If unable to solve this problem ,why should any one even think, or still more absurdly say, that Mind, creative Mind, does not exist? There appears to be a tremendous difference in between evolution and mutation, between the very natures of a continuous and a broken line.

True: there is no set gulf in between inorganic and organic, between non-living and the living, nor plants and animals, and barriers are blazed away; still none knows which is absolute, evolution or mutation. But let the discovery be made able to settle for all time this all-important question, then the positive demand of science whether physical or mental, is for a master Mind, a creative Mind, a Mind—Mind.

Evolution and mutation therefore exist in Mind itself. There is no escape from this startling truth. Positively the master Mind is experimenting, inventing, evolving or mutating. See this deduction: Mind is creating, adding to itself. For no method, type, kind or quality of evolving or mutating can occur without preceding Mind, action or thought. Mind is the base. To these preceding thoughts, Mind atoms, Mind electrons if one pleases, is here given the name Mentiods. Mind is the only entity in existence having power to create.

After a lapse of forty centuries, a period during which men almost forgot, or ignored their mental powers; they are now commencing the fascinating study—human mentality. In remote antiquity, in the distant East, in India, a mighty race, the Aryan Hindus, produced a series of able mentalists. They passed century after century along the banks of the Ganges, Jumna and Indus in wondering what their Minds could possibly be. Perhaps they carried their researches on mentalism to excess, to the neglect of the material things of life in this world. But Western nations are now carrying matters to the opposite extreme. From the decline of true Hindu philosophy, as long ago, no doubt as from 2,000 to 1,500 years B. C., until about the period 1850 to 1880 A. D., that inscrutable mystery—the Mind—was not studied. Scarcely any effort was made striving to analyze and find the properties of the complex entity. Since 1880 a large number of works have appeared on mentalism. Continued thought on the subject has produced many elaborate

works. And many series of intricate experiments and analyses have been made in mentological laboratories.

But all these researches have merely brought us through the portals of a vast mental maze. We are all in a labyrinth more inscrutable, profound and intricate than that of the Egyptians at Arsinoe. That had 3000 mysterious chambers. Some of these were entered during mystical and esoteric rites, but once each year. It had 1,500 porphyry and marble rooms above the earth and 1,500 below the surface. The occult, the mysterious, and obscure things of all antiquity were centered in these splendid halls, chambers and passages. Without a guide one could easily lose his way amid the long-drawn avenues, stately pillars, hidden nooks and corners, and winding stairways. These led from exoteric rooms to esoteric directly below. Philosophers, students of the occult, and intellectual men from India, Bactria, Persia, Babylonia, Palestine, Phœnicia, Greece, Rome and Gaul came here to learn of wonders wholly unknown to material eyes, but to mental only. Elaborate rites of initiation, with the teaching of wisdom were kept up with regal splendor during many centuries. For all traces of wisdom were kept in secret during all antique ages. And the word occult was applied to Mind studies only.

But our own minds are labyrinths far more inscrutable than those at Arsinoe, Crete and Lemnos. We are now in the great hall just beyond the gateway. Colossal doors as of granite sealed since man began to explore, are on all sides. One or two have been opened. They reveal vast corridors lined with gates and doors. Three or four of these have been gently moved ajar and peering eyes have rested with awe on other openings, dark and dim recesses, crypts, store-rooms and cells. Few have been entered, and those that have are not understood. The writer has been in two labyrinths,—Mammoth Cave in Kentucky, a maze of corridors in stone, stalactites and gloom; and the other was the floral maze at Hotel Del Monte, Monterey, California. The winding ways of most intricate design were in between living walls of cypress, trailing vines, roses, heliotropes, carnations, hydrangeas and myriad kinds of flowers beside, all bathed in the splendors of light from that glory—the Sun of California. In both mazes, one of stone and the other of flowers, I became bewildered and lost. But these riddles are as toys compared with the mighty mazes of Mind. So far, we have not explored beyond the gates of the temple. But the Hindu mentalists

plunged into the wilderness and discovered esoteric wonders. A few of their descendants are now living in the Orient; and a very few have visited the West, even entering the United States. These two or three knew how to use their Minds. This wisdom is a legacy of forty centuries. The army of ghouls and fakirs have no relation to these, however. At present, mentalists of the West are comparatively ignorant of even the elements of Mind. None ancient or modern has discovered its origin. Perhaps this must remain forever unknown. The ablest scientific men at present do not know what Mind is. Ask one of these great scientists, as I have often, about Mind, and they recoil as though they had dashed against a stone wall. A well-known astronomer told me that he "could not even begin to think about his Mind." He was a deep mathematician, trained from youth to do that wonderful thing—think. I have asked astronomers, chemists, physicists, physiologists, biologists, mathematicians, botanists, geologists and other trained scientific men about Mind. Without an exception they seem to be disconcerted, and are unable to give any opinion. So, I say, that nothing is known of the true nature of Mind, thought, will, perception, reason, memory, recall, intuition, introspection, or any other word so often based on Mind in books on mentalism. Thus books are printed striving to show that Mind is a cause; and other volumes to declare it to be an effect. Whole shelves are groaning with "labored tomes" to prove that there is a "primordial cosmical Mind," and that it was in existence long before matter. Just above, the boards are bending with philosophies teaching that matter has existed from all eternity and that Mind is an extremely late product of activity in matter.

STILL LIFE

Take the familiar case of Mind here roundabout, on earth. Our little atom of a world, "our earth," was born out of cosmical turbulence, upheaval and unrest. Awful churnings, kneadings and mixing of the raging elements went on for ages before the globe, a spherical world, the earth, could be formed out of primeval chaos. Millions of years of local turmoil in geologic strata succeeded the formation of the ball. Eons of earthquakes, bellowing volcanoes, and explosions of pent-up

gases, rolled away in colossal war. Water, and ages of hissing of steam in turbid boiling seas and seething areas of mud, followed in the work of preparing soil. Finally, terrestrial scenes of turbulence died away; hoarse notes of geologic war lapsed into silence; the tossing sea subsided into its present wave-heights; howling winds became a comparative calm. Internal heat died out with thickening crust, while external lightnings dwindled into the tiny outbursts of a summer's storm. Yet, all was not still and quiet enough for the appearance of that awful mystery, life. Clouds must roll away, the sun must assume dominion, meteorological upheavals must be curbed, and lightnings controlled. Genial warmth, with the exact degree of humidity followed. All cosmical turbulence died out, and a hush and silence fell on nature. Intense expectancy animated the ancient rocks, and the "mountains looked on the sea." Peaks, hills, clouds, and waves knew that the one event of the world was about to occur. The stupendous mystery did come on apace, the result of a thousand million years of work of preparation appeared, and nature looked on in amazement, but with microscopic eyes. The mighty event was this: a bag of gelatine inclosed a drop of water at mild temperature. But the bag or sack, an exceedingly thin membrane, inclosed the two standing marvels of nature, Life and Mind. The animal, the first, was an amœba, and the wonderful nucleus within. It at once began to use its Mind, or at least that part of Mind now called will. That is, it made up its Mind to move and moved. Again it made up its Mind to eat, and it did eat. The next act was that of dividing into two beings. The latest and direct result of the appearance of the first amœba is the production, in very recent times, of mathematicians, two to each million of human beings. These two are so marvelous that entire hundreds of millions of others—men and women apparently like them,—can form no conception of their wonderful Minds. Mentalists are unable to detect any difference between the wills of amœbas and men. Mind has expanded in an unbroken series from an amœba to a mathematician. There are perhaps sixteen hundred million human beings now living, and thirty-two hundred are mathematicians. Of this number there are possibly forty great mathematicians, and a dozen greater than the remaining twenty-eight. Then these twelve men know more about the cosmic universe in which they find themselves than the entire human

race beside. It is now known that no concept can be formed in the Mind regarding nature, in a non-mathematical mentality. At the World's Congress of Mathematicians in St. Louis, at the Fair, I looked day after day, just through little wicket doors, in the great doors, of their Minds. Once or twice I caught glimpses of the shining doors and gates of corridors within. And who is able to analyze one of these men's Minds? There were 82 trained scholarly men in the room; and one could simply feel their mighty Minds. Each man could weigh the universe of stars and tell their vast distances from the earth. A dozen languages were spoken by them, for they were the select ones from as many nations. I then wrote an article which was published in a magazine saying that the "human mind is possessed of limitless power." And the reader would think so had he been in this classic and now historic congress of the world's most magnificent Minds. I believe it, it is true, Mind can be expanded to any extent. It is as wide and as boundless as interminable cosmical space. But it is with a feeling of humiliation, chagrin, discomfiture and dismay that I here confess that I have no trace of an idea what it is. I cannot begin to think about it.

WE THINK IN WORDS

Throughout the centuries, the ineffable logos has been involved with the Creator. It is known that the method employed by the Creator to manifest to man is by means of words, and man, so far, has been unable to detect—or even begin to think of any other way than by means of words. Then the Creator is A E I O U, the vowel sounds, since no word can be formed without them—no language, or expression, no manifestation of Mind to Mind by means of one great avenue of approach—sound. This thought of the Creator expressing by vowels, the basic atoms of human speech, is simply overpowering in its greatness and majesty. See this mystery: the vowels for long ages have been written, not AEIOU in their regular order, but IEOUA, but I is the human personality, the ego, the I am. Also the life of man. We are already within a labyrinth of inextricable mysteries. This, however, is clear: Man, the mental man, is exceedingly near the Creator. So near that he cannot speak without compounding the very name of the Creator. If we see any object, we think at once of a name for

it; but no name can be formed without the use of the vowels—that is, without the Creator's name; and we cannot speak the name of the Creator without speaking the vowel name of our own living personality.

It is said we cannot comprehend, conceive of, or understand, an Infinite Being. True, nor can we understand great mathematicians, human beings like ourselves, unless we are great mathematicians. The gulf fixed between the powers of Mind of one who cannot learn the properties of numbers, and any one of the world's profound mathematical Minds is as deep and wide as that between a finite mathematical Mind and Infinite Mind. In difference of degree is man involved with the Creator. Man by eternal progression can diminish the number of separating degrees and approach the Original Mind. It is the province of modern mentological science to discover and then teach how this may be done.

Man has ever known that he is closely allied to, or a part and parcel of, the Infinite Mind. All books which endure for many centuries do so, because they teach this fact. Suppose that we see a spherical diamond, or what appears to the unaided eye to be a true sphere, and then apply a microscope and find many thousand facets or minute sides; we could compare it to Mind. Throughout these articles, Mind will be considered to be illimitable, and endowed with an infinite number of points of thought radiation.

There must be only one kind of Mind in existence; for there cannot be more than one kind of mathematics, true in the very nature of numbers. For we cannot find any fact in nature without finding its mathematical aspects in relation to all other facts.

ASTRONOMY

Whether the universe is finite or infinite may never be known. If infinite, man cannot think of it unless as some mentalists are now beginning to claim and assert, the human mind is infinite or capable of becoming so. If finite, then it is now known to be so large that men's minds are unable to think of the vast dimensions. The velocity potential of all cosmic energy is 186,380 miles per second, usually expressed in terms of light. But this is the space speed of all radiant

energy, heat, electricity, and, beyond doubt, forms and modes of energy not yet detected or isolated.

Kapteyn, the great astronomer of Groningen, Holland, in his lecture delivered in Pasadena, in 1909, stated that the results of his exhaustive series of star gauges led to the conclusion that the entire sidereal structure is so wide that light requires as many as 60,000 years to move from one boundary to the other. This is practically infinite for man in his present phase of Mind. Photographs show perhaps 100,000,000 suns. Mathematics weighs enough matter in existence to make 32 billion suns like our own. This matter is invisible, and cannot become visible until it condenses into hot spheres, or in light-emitting nebulæ. The entire structure of stars—suns—seems to be in rotation. For the drifting of suns in opposite directions indicate rotary motion, or at least two colossal streams. Our sun is now drifting toward the giant sun Vega, with a speed of fourteen and nine-tenths miles per second.

One of the most remarkable achievements of science is to tell the approach or recession of stars in the line of sight. This was long thought to be impossible, but the spectroscope is able to detect compression or expansion of waves of light, when a sun is coming straight towards the solar system, or receding from it on a straight line. The principle involved is called Doppler's from its discoverer. The ear can detect a rise and fall in rates of vibration of a locomotive whistle or bell, when an express train is coming or going. The stellar floor, a faint shimmer and sheen visible on the darkest nights, after rains, when all dust is cleared out of the mountain air, is most impressive to behold. It extends in every direction and includes the universe, save where there are dark spaces here and there—openings or caverns leading to the unknown. These are black indeed, and awe-inspiring.

If the earth is compared to the mass of the universe as now known, it may almost be called zero, nothing, or at least an infinitesimal. The better way would be to say that our earth is a cosmic atom, and still more impressive and expressive to call it an electron. Let there be any assignable number of suns, and any assignable number of inhabited worlds like our earth, then all these homes of life and all living beings could come to an instant end and not be missed, for all suns would move as if nothing had occurred. Yet, Mind, even the human Mind, is far more wonderful than the entire universe of matter.

The mere fact that Mind is able to discover all these wonders in the sidereal structure, amid infinities, among congeries of suns and nebulas is itself more remarkable than all else combined. How do we think? How weigh a sun, a hundred million suns—indeed how weigh them all? The scientific name of the earth when compared mathematically with the quantity of matter in existence is infinitesimal, or next to nothing or zero. When compared with the mass of the sun, it is always entered in equations as one, a unit.

The mathematical name of the sun is little star. When it is compared with the mass of the sidereal system of stars, it is written 1, or one. The perpetual mystery is how is Mind able to grasp any of these stupendous problems? And how were the trails of reasoning followed to a successful conclusion —leading first to weighing the entire earth, then the sun, and from these data all other suns? This fact cannot be explained now. The reason why is, we do not yet know who we are.

Here is a photograph taken by Professor E. E. Barnard, of a dense and rich telescopic area in the Milky Way. The delicacy in detail is lost in making an engraving; but the original negative, seen through a microscope, is an object so marvelous that astronomers are filled with awe when they gaze upon this wonder of the twentieth century. This photograph is dotted with more than forty thousand tiny images of suns. All objects in the sky, seen at night, except the moon and the seven nearby local planets, are white-hot or red-hot glowing suns. The ordinary name given to the celestial hosts is stars. It ought to be dropped, as it has no true astronomical meaning. Our sun is a modest little star although it is 1,310,000 times larger than the earth. The Milky Way, or Galaxy, is an apparent ring extending entirely around the universe of stars visible in the largest telescopes. It is composed of suns in literal millions. They are so remote that as seen from the earth, they appear to be close to each other, while really they are separated by millions and billions of miles. To the eye, the belt of soft radiant light looks like a continuous band of cloth of pearl, but telescopes have the effect of bringing objects nearer. This separates the filmy cloud into many millions of glittering, but minute points on the black background of space. At a distance, forest trees seem to be close together, but as they are approached they separate and stand alone. It is next to impossible to describe the matchless beauty of

the Milky Way as seen in a telescope of great power. Carpet a large room with black velvet. Have many electric lights in the ceiling. Throw down and scatter all over the black floor a bushel of minute diamonds, rubies, pearls, sapphires, opals, amethysts and other gems. Then turn on the light. You would have a faint imitation of the supernal glories of the Galactic hosts. For the appalling depths of space look black in our great telescopes. In places, these suns look by perspective as though they were arranged in piles, heaps and banks; or built up into shining terraces. And they look as though raked into colossal windrows, or twisted into spirals, or dashed into wisps and cosmic spray. In some places the concentration is so great and dense that only the most powerful telescopes on earth can magnify enough to bring out details. A few clusters exist that have not, so far, been resolved into these needle points. And the height of human happiness is to watch these vast congeries of distant suns in a huge telescope. An entire lifetime can be passed in exceeding great joy. To bring out the unutterable beauties, the observatory must be on a mountain above the dust layer that surrounds the earth. For one little particle of dust can hide an enormous sun, when its image is finer than the point of the finest needle. And then, there are gigantic caves, caverns or openings in this mighty stellar floor. They are as windows looking out into infinite wastes of space. Their mouths are jet black in contrast with the white banks of suns roundabout. One is always startled when the telescope sweeps from glowing areas of suns, over a black abyss, leading to the unknowable. In August and September those unspeakably rich regions of the Galaxy, the zodiacal constellations Sagittarius and Scorpio, hang up sidereal sheets of shimmer and sheen over the waste places of the Pacific and drag the careless garments as it were, in its waters. Nothing terrestrial hides the supernal vision, far and away to the South. The line of view goes over the plains of Paradise laden with oranges and lemons, almonds and apricots, and with carnations and roses, with heliotropes and hydrangeas. There are a hundred of these awe inspiring openings in this part of the zodiac, places in space where the majestic cosmical scene reaches the limit of Nature. It cannot produce greater magnificence, splendor and magical beauty.

Since man appeared, no more wonderful work of his hands has been wrought. The eye gazes while voice is hushed, but cannot see when turned away from the telescope. Images in the brain vanish instantly. But the sensitive plate stores light from the shades of falling night until the approach of dawn. All night exposures are made by the aid of a clock that turns the camera westward with precisely the same rate that the earth turns eastward. Entire millions of suns project their microscopic images on the plates that no telescope can see. Nature cannot lift a hand without being photographed. The imperturbable eye of man is always set on some part of the sidereal structure. The entire celestial vault has been photographed on over 25,000 distinct plates. Human speech is impotent and pens lifeless in any attempt to describe the intricacies and complexities of the universe of suns. Labyrinths, corridors, passageways and lanes, winding between stellar walls, and out to great starry fields, and these so deep and wide that even mathematicians are overwhelmed, submerged and lost in wonder.

SOLITARY WASTES

Let us mount the great telescope in this the Lowe Observatory along with other complex instruments, such as telespectroscopes, telecameras, micrometers and reading microscopes, on a flat car and "launch out into the deep." We must take a parting look at our receding sun and earth and then watch the Milky Way before us. Let the car move one mile each minute and not stop. Let it keep going on and on during one billion years. Then it will be half way to the Galactic host of suns, on the minimum and most conservative estimate of its distance by modern astronomers. A billion is one thousand million. But no brain can comprehend one million years even. At this half-way point, let us take a photograph of the same spot in the Milky Way, that we photographed before starting, and compare the two. Nothing less than a powerful microscope could detect any difference between the negatives! The telescope would be unable to spread out the stars to more than minute microscopic distances apart; and be almost as powerless as when far and away back on the earth. Select two suns, that, as seen from the earth, were the one-fiftieth of one second of arc apart; then at the half-way place they would be the one twenty-fifth of a second apart. Both distances are

microscopic. The unaided eye would not see any difference in the Milky Way after moving toward it with a speed of a mile per minute for one billion years. Four or five blank spots might be seen on the plate by the microscope. These are the places of missing suns, passed on the way out, and left in the rear. Upon looking backward, the full power of the telescope would be required to see "our" star—the sun, even if it could be identified among millions like it. Let the flying car move onward during another billion years; then it might possibly be somewhere near the outside limits of the Galaxy.

During the final or home run of one hundred million years, we would take photographs at short intervals, say of one thousand years and compare with preceding photos. Differences would begin to be slightly more prominent, and the little dots wider and wider apart. In the course of more thousands of years, the thin white cloudlike effect of the Milky Way would disappear. And then low power instruments like opera glasses could see the widening spaces; and later the eye without aid, could observe the expanding distances between the myriads of suns. Drawing still nearer the mysterious objects the suns would grow bright and much father apart. Keep on, and at the end of the two billion year journey, if you actually reach the Milky Way, you would not know it; for the celestial canopy of stars would look as it does when seen here from the earth. All the suns would appear to be as small and as far apart as they do from the earth's place in space. On our way we must have a care not to get anywhere near a star, for if we do, the car will burn to a cinder, and the glass and steel of the instruments melt in the terrific heat. No doubt now exists that the sidereal structure is shaped roughly like a convex lens, with diameter one way far greater than its thickness. Our sun and the earth are somewhere adjacent to the center; and upon looking through a great depth of stars towards the "edges," they appear as a confused cloudlike mass. Professor Simon Newcomb says: "There is every reason to believe that out of several hundred millions of stars in the universe, no more than 20,000 are within the distance corresponding to a parallax of 0.02 seconds of arc." Sci. Am. Supp., May 30-03.

But the Milky Way is more distant than any of the 20,000 stars. And for the purpose of this note, I used a parallax slightly less—0.019, which makes the Galaxy distant just one

quadrillion miles. And a body moving one mile per minute, requires two billion years to traverse that mighty distance. We have used big number by selecting the snail's pace rate of only one mile per minute. So to avoid them, the unit speed adopted is 186,380 miles per second, the real velocity of light. There are 31,558,149 seconds in a sidereal year, and this number multiplied by 186,380, gives the true unit of measure always used in surveying space. And this awful speed, the time required for light to move one quadrillion miles, is 170 years. I have given the extremely low distance for the Milky Way to not appear extravagant. It actually is much farther away. Many mathematicians have estimated that there are stars so enormously distant that it takes light from 3,000 to 15,000 years to come from them to the earth. The 170 above is modest indeed. Since suns are sunk into such deeps that only the most powerful telescopes are able to see them, it follows that all habitable worlds are invisible. Suppose there are one billion suns—without doubt there are many more—and that each has eight worlds revolving around it, as is the case with our sun; then there would be eight billion planets. The whole of them could be annihilated at once and not be missed. The earth is unknown save to our nearby specks of neighbors such as Venus and Mars. It makes no difference to Nature whether the earth exists or not. The word parallax above, means the distance of the earth from the sun, as seen from a star. This distance usually looks like the diameter of a hair or spider's thread.

IDEATION

For purposes of real imagining, no disturbing object must be in sight. Nor must sound harass. Within a dense cloud on the summit of a mountain far removed from all humans, or animals, or insects, at the witching 14th hour, or 2 a. m., the ideal conditions are found. If the mind longs for sound, it must be imagined; for silence, solitude and stillness reign supreme. The best imaginary sound—one that satisfies all longings—is that imagined to issue from the axis of the earth in its turning. If you imagine that light exists, it merges into light supernal. For the real, turn on the light electric. Gigantic masses of cold metal, functioning as armatures in dynamos in Los Angeles, twenty miles away, saturate wires which, leading up to this peak, are always ready

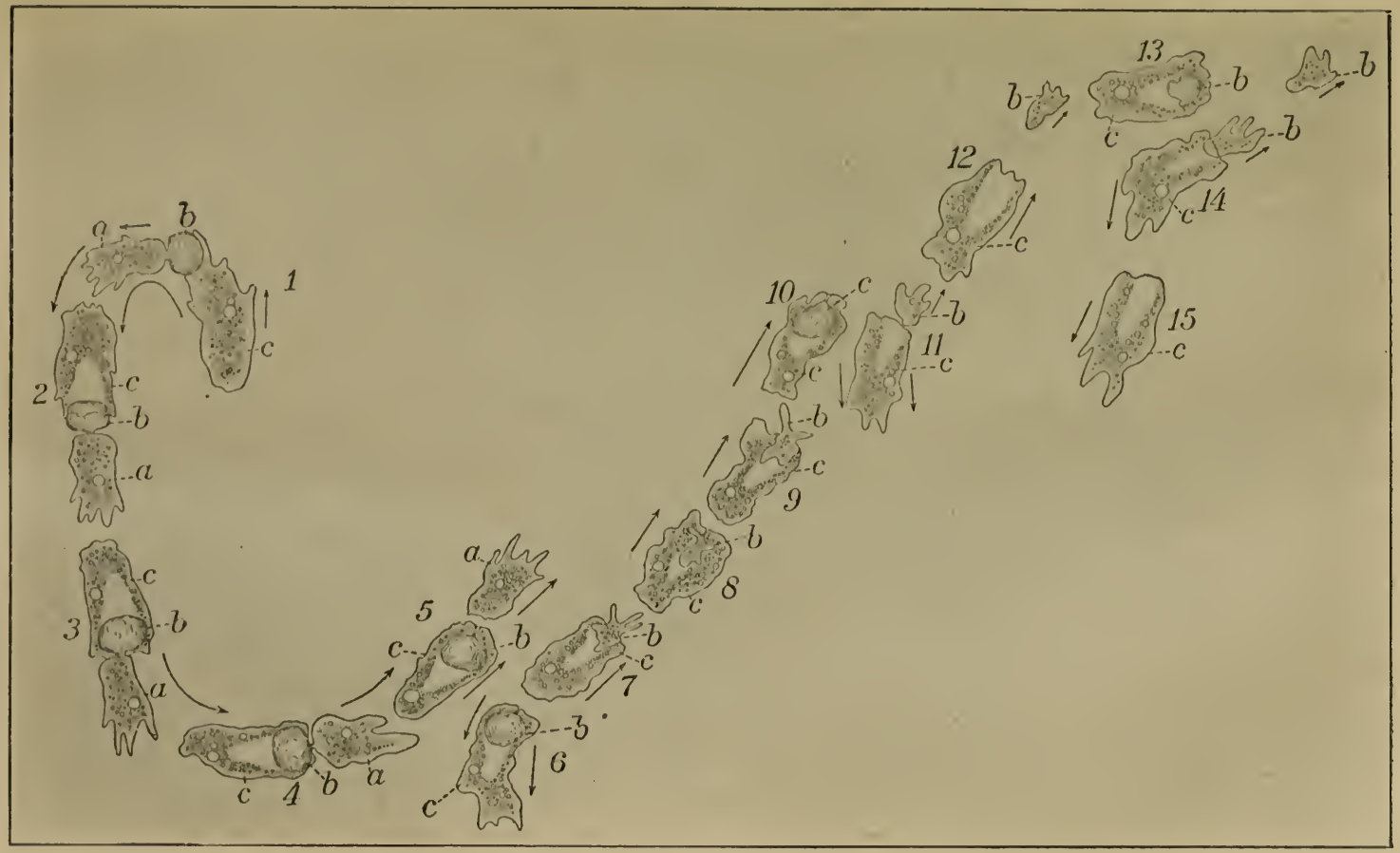


Fig. 3. Pursuit, capture and ingestion of one Amœba by another; escape of the captured Amœba and its recapture and final escape.

to furnish light. The solution of riddles is better accomplished within the time limits of from midnight to the first faint glow of advancing dawn, than from noon to the approach of evening shades. When well along toward the close of a series of imaginings, and things are almost ready to equate into a solution of any enigma, even the buzzing of one minute insect's wings will usually upset all, and the riddle remains unsolved. I cannot describe absolute silence combined with the absolute of absolute darkness in the interior of a colossal mountain cloud. And if the reader wishes to experience the height of heights of satisfaction that can be experienced by that standing mystery of mysteries, the human personality—namely, the faculty called racing of the mind, he must go to a place where light and sound do not exist. I cannot imagine in the clefts of rocks thousands of feet under mountains, within midnight caverns, and deep-mouthed caves, owing to the occasional dropping of water. This minute sound will disturb an imaginary visit to the bottom of the cavern in the grand Nebula in Orion. This giant rim, or brink, is 15 minutes in diameter, and with a parallax of the 1-200 second, a very reasonable estimate, the linear diameter is 16,740,000,000,000, nearly 17 trillion miles. But the photographs show perspective, a background receding into the distance. Beyond doubt, the depth of this cave in the stellar floor is three times the width, or 51 trillion miles. This is the distance of Sirius from the sun. A row of 3000 rings, side by side, each of the diameter of the orbit of Neptune, could move into this huge sink in cosmical wastes, or 90,000 circles of dimensions of the orbit of the earth. Glittering points, all suns, no doubt, adorn the brink and adjacent regions, and glow and blaze on herculean walls within. For what has all along appeared to be a flat surface in the central regions of this nebula, now reveals distant perspective, giving every appearance of a receding floor of a cave. But the cave, unlike that in the earth in Kentucky, U. S. A., set in the blackness of darkness, issues floods of pearly light, and bursts into shining magnificence. Streamers, wisps, sprays, filaments and threads of starry lace adorn a wide area, and glow within the cavern's vast deeps. And here, I am imagining these glories in the gloom and solitary wastes of a cloud in impenetrable darkness, and amid mountain stillness far too intense to be imagined by one not having had experience with solitude. The huge Nebula

in Orion is one of many thousands, and other abysses may be larger.

Any celestial object having a parallax of one second is distant from the earth 19,182,645,000,000 miles. With parallax of 1-200 second the distance is 200 times greater. With angular motion sufficient to be translated into a linear velocity of 200 miles per second, at that distance, then the quantity of matter in existence to be able by means of gravitation to impart that falling specific speed, the body having fallen in from an infinite distance, is sufficient to form thirty-two billion suns like our own. These, and all else beside, are formed of electrons. These were created by Mind—the only entity able to create. This set, rigid, and fixed fact forces the transformation of all physical science into mental science. This train of imaginings running from electrons, to a magnificent display of formed electrons, the Nebulosity in Orion, and thence to Mind supreme, is moved by root-words of human speech. These are Mind concretions, and are more nearly indestructible than so many masses of granite. A phase of directivity is based in languages of man.

QUOTATIONS AND ILLUSTRATIONS

(From "Behavior of the Lower Organisms," by H. S. Jennings, published by The Columbia University Press, New York, 1906—The Macmillan Company, Agents. By permission.)

"The typical Amœba here shown (Fig. 1) is a shapeless bit of jellylike protoplasm, continually changing as it moves about at the bottom of a pool amid the debris of decaying vegetation. From the main protoplasm's mass there are sent out, usually in the direction of locomotion, a number of lobelike or pointed projections, the pseudopodia (Fig. 1, ps.). These are withdrawn at intervals and replaced by others. Within the mass of protoplasm certain differentiations are observable. Covering the outer surface there is usually, though not always, a transparent layer containing no granules; this is called the ectosarc (Fig. 1, ec.). Within this the protoplasm is granular, and contains bits of substance taken as food, vacuoles filled with water, and certain other structures. This general protoplasm is known as the endosarc (Fig. 1 en.). Within the fluidlike endosarc we find two well-defined structures. One is a disk-like or rounded, more solid body, known as the nucleus (nu.). The other is a spherical globule of water, which at intervals collapses, emptying the contained water to the outside. This is the contractile vacuole (c. v.). In its usual locomotion the movement of an Amœba is in many respects comparable to rolling, the upper surface continually passing forward and rolling under the anterior end, so as to form the lower surface. By repeated stimulation of an Amœba it is possible to drive it in any desired direction. The advancing edge is touched with the glass tipped rod; it thereupon withdraws. A new pseudopodium is sent out elsewhere. Amœba react to chemicals, heat, light and electricity. From these they seek to escape. Light has a peculiar effect on an Amœba. In general, its functions seem better performed in the dark; strong light interferes with it seriously. It is well known that exposure to strong light is destructive to most lower organisms. An Amœba reacts in a very definite way when a continuous current is passed through the water

containing it. That side of the body which is directed toward the positive pole or anode contracts as if the animal were strongly stimulated here. Then a pseudopodium starts out somewhere on the side directed toward the negative pole or cathode, and the amœba creeps in that direction.

"In the water in which Amœba lives are found many other minute animals and plants. Upon these, Amœba preys, taking indifferently an animal or a vegetable diet. Its behavior while engaged in obtaining food is very remarkable for so simple an animal. Spherical cysts of Euglena are a common food with Amœba proteus (Fig. 1.). The cysts are smooth and spherical, easily rolling when touched, so they present considerable difficulties to an Amœba attempting to ingest them. Fig. 2. Thus, in a case observed by the author, an Amœba proteus was moving toward a Euglena cyst. When the anterior edge of the Amœba came in contact with it, the cyst rolled forward a little and slipped to the left. The Amœba followed. When it reached the cyst again, the latter was again pushed forward and to the left. The Amœba continued to follow. This process was continued till the two had traversed about one-fourth the circumference of a circle. Then (at 3) the cyst was pushed forward rolled to the left, quite out of contact with the animal. The latter then continued straight forward with broad anterior edge, in a direction which would have taken it away from the food. But a small pseudopodium on the left side came in contact with cyst, wehreupon the Amœba turned and again followed the rolling ball. At times the animal sent out two pseudopodia, one at each side the cyst (as at 4), as if trying to enclose the latter, but the spherical cyst rolled so easily that it did not succeed. At other times a single, long, slender pseudopodium was sent out, only its tip remaining in contact with the cyst (5); then the body was brought up from the rear, and the food pushed farther. Thus the chase continued until the rolling cyst and the following Amœba had described almost a complete circle, returning nearly to the point where the Amœba had first come in contact with the cyst. At this point the cyst rolled to the right as it was pushed forward (7). The Amœba followed (8, 9). This new path was continued for some time. The direction in which the ball was rolling would soon have brought it against an obstacle, so that it seemed probable that the Amœba would finally secure it. But

at this point, after the chase had lasted ten or fifteen minutes, a ciliate infusorian whisked the ball away in its ciliary vortex.

Such behavior makes a striking impression on the observer who sees it for the first time. The Amœba conducts itself in its efforts to obtain food in much the same way as animals far higher in the scale."

"Amœbæ frequently prey upon each other. Sometimes the prey is contracted and does not move; then there is no difficulty in ingesting it. But the victim does not always conduct itself so passively as in this case, and sometimes finally escapes from its pursuer. This may be illustrated by a case observed by the present writer (Fig. 3).

"I had attempted to cut an Amœba in two with the tip of a fine glass rod. The posterior third of the animal, in the form of a wrinkled ball, remained attached to the rest of the body by only a slender cord,—remains of the ectosarc. The Amœba began to creep away, dragging with it this ball. This Amœba may be called a, while the ball will be designated b (see Fig. 21). A larger Amœba (c) approached, moving at right angles to the path of the first specimen. Its path accidentally brought it in contact with the ball b, which was dragging past its front. Amœba c thereupon turned, followed Amœba a, and began to engulf the ball b. A cavity was formed in the anterior part of Amœba c, reaching back nearly or quite to its middle, and much more than sufficient to contain the ball b. Amœba a now turned into a new path; Amœba c followed (Fig. 21, at 4). After the pursuit had lasted for some time the ball b had become completely enveloped by Amœba c. The cord connecting the ball with Amœba a broke, and the latter went on its way, disappearing from our account. Now the anterior opening of the cavity in Amœba c became partly closed, leaving only a slender canal (5). The ball was thus completely enclosed, together with a quantity of water. There was no adhesion between the protoplasm of b and c; on the contrary, as the sequel will show clearly, both remained independent. c merely enclosing b.

Now the large Amœba c stopped, then began to move in another direction (Fig. 21, at 5-6), carrying with it its meal. But the meal—the ball b—now began to show signs of life, sent out pseudopodia, and became very active; we shall therefore speak of it henceforth as Amœba b. It began to creep

out through the still open canal, sending forth its pseudopodia to the outside (7). Thereupon Amœba c sent forth its pseudopodia in the same direction, and after creeping in that direction several times its own length, again encolsed b (7, 8). The latter again partly escaped (9), and was again engulfed completely (10). Amœba c now started again in the opposite direction (11), whereupon Amœba b, by a few rapid movements, escaped from the posterior end of Amœba c, and was free—being completely separated from c (11, 12). Thereupon c reversed its course (12), overtook b, engulfed it completely again (13), and started away. Amœba b now contracted into a ball and remained quiet for a time. Apparently the drama was over. Amœba c went on its way for about five minutes without any sign of life in b. In the movements of c the ball became gradually transferred to its posterior end, until there was only a thin layer of protoplasm between b and the outer water. Now b began to move again, sent pseudopodia through the thin wall to the outside, and then passed bodily out into the water (14). This time Amœba c did not return and recapture b. The two Amœbæ moved in opposite directions and became completely separated. The whole performance occupied about fifteen minutes." Jennings, pp. 1-15.

COMMENT ON PROFESSOR JENNINGS' RESEARCHES

Leverrier and Adams discovered the distant, and to them an unknown and invisible world—the planet Neptune by means of mathematics. Modern spectroscopists perform the seemingly impossible work of determining the approach and recession in space of suns in the line of sight, and their specific speeds. And they also weigh the flying suns. The microscopist brings countless billions of living things into view, photographs them in rapid motion and then projects these hitherto unknown and unseen units of life from the realms invisible, in full motion upon the retina of the eye, an achievement also apparently beyond human powers. These are the highest works wrought by Mind so far in man's mental evolution—triumphs of Mind. But I submit to the reader the amazing facts of these minute jellylike microscopic animals in their search for living creatures for food.

Such highly organized and intelligent animals as dogs and hares are exactly imitated. Rabbits fleeing from wolves and dogs suddenly reverse direction of flight to disconcert their pursuers. But these animals have eyes, ears, noses, tongues and nerves, the five senses in a high degree of perfection, hearing, seeing, and smelling being much more nearly perfect than they are in man. The "bags of glue," sacs of gelatinous water, scarcely enclosed specks of protoplasm actually and positively contain, enclose, include, use, manifest, or express Mind. Search every language and no word can be found to take the place of the mighty word Mind. This is the unseen force, the unknown worker and prime mover. An Amœba has no organs whatever, but it behaves precisely as it would having eyes. It is composed of oxygen, hydrogen, nitrogen, carbon and a trace of sulphur combined in a complex that requires the most skillful chemist to analyze, and life. And this in water scarcely more than separated from adjacent water by a filmy surface. To become aware of the existence of the cysts required the action of Mind. Without nerves, they feel heat, light and electricity. These simple—really complex, for protoplasm is intricate in the extreme,—beings behave like a dog in pursuit of prey, and escape from enemies. It is known that many attributes and qualities of Mind in dogs are exactly alike the same phases in man. Thus the lowest animal and highest man, when they possess like faculties of Mind, display these as being precisely alike. The brain of an ant, as Darwin says, "is one of the most wonderful objects known." How minute is the brain of a small ant; yet it is the place of expression of Mind, having an amazing similitude to phases in man. The ants do human things, and these marvels, together with the mental wonders of bees, have ever been the subject of thought by able philosophers. How excessively minute are the surfaces of convolutions in the brain of an ant; yet these distinct and separated areas are points of manifestation of as many faculties of Mind.

J. BUTLER BURKE'S EXPERIMENTS

The culture experiments of J. Butler Burke in the long-time famous Cavendish laboratory, Cambridge, England. Many discoveries that have changed the career of man have been made in this historic building. Thus Michael Faraday, on August 31, 1831, took up a wire that was carrying a feeble current of electricity and happened to bend it around a piece of iron. The iron instantly became a magnet. Every electric railroad, telegraph, telephone, dynamo, motor, and all else electro-magnetic in machinery came from that little—majestic—event.

Burke placed the extract of one pound of beef in 2.20462 pounds of distilled water; added 1 per cent peptone, 1 of salt, and 10 of gelatine, and applied gentle heat until all of the ingredients were dissolved. This compound is called bouillon, and has played an important part in bacteriological laboratories. Any germ placed therein will grow and divide into others, and arrange into groups, tangled chains of microbes. Burke sterilized the bouillon by means of heat up to 266 degrees F., 54 degrees hotter than boiling water. This kills every known type of bacteria. Into this sterile or lifeless mixture a small quantity of radium bromide was placed, and the whole set in a warm cabinet and left during twenty-four hours, when a wondrous growth appeared under the radium. He placed some of these growths under a high power microscope. He wrote: "They looked like microbes, but as they did not give sub-cultures when inoculated in fresh media, they could scarcely be bacteria. The progress of any of the sub-cultures, after a month, was extremely small, certainly too small for bacterial growth. On heating the culture, the bacterial-like forms completely disappeared, but only temporarily, for after some days they were again visible when examined in a microscope. Nay, more, they disappeared between the glass slides when exposed to daylight for some hours, but reappeared again after a few days when kept in the dark. Thus it seems quite conclusive that whatever they may be their presence is due to the spontaneous action of the radium."

Burke turned the objects over to a skilled microscopist to secure his opinion. And "his observations fully confirm my own. He assures me that they are not bacteria and suggests that they might possibly be crystals, highly organized bodies,

though not bacteria." "Photographs, together with results of microscopic observation, indicate that a continuous growth and development take place followed by segregation and these suggest vitality. I have ventured, in order to distinguish them from either crystals or microbes, to give them a new name, radiophobes."

From these experiments, the impression went all over the world that life had been developed or evolved from inorganic matter. But the tube which held the bouillon was stopped at the top—"impervious to bacteria." Suppose that the objects that appeared in Burke's cultures had been alive—which they were not, as they did not divide when placed in other media —then there is no proof of spontaneous generation or radiogenesis, because air passes between the fibers of the cotton wool. And germs of life revealed by the new ultra-microscope are much smaller than any bacteria known to Burke. Many similar experiments have been made since, notably by Leduc, in Nantes, France. He has placed many kinds of chemicals in liquids of different kinds and densities and degrees of viscosity. In these mixtures he has obtained many forms extremely close in appearance to living things. If Leduc has not at this writing produced by chemical means, bodies that will germinate, divide and sub-divide, by fiission, he has not extended discovery into regions of creation far beyond Burke, for his culture bodies died. The studies and results secured by Leduc are very wonderful indeed. If man actually produces bodies that will divide grow, reproduce their kind and live, then the triumph of that phase of Mind now manifesting as human will be exalted to a very high estate; and prove the contention of this book, namely, that Mind is at the base of Nature.

From address of Professor H. E. Armstrong, President of Section B, Chemistry, at Winnipeg Meeting of the British Association:

"If we inquire as to the general affect of the increase of knowledge of organic compounds, it is clear that our conceptions of structure must be granted more than analogical significance. Everything tends to show that function and structure are most closely connected—odor, taste, color, physiological effect are specific rather than general properties, each conditioned in its special variety by some special structure;

we are approaching very closely to a time when it should be possible to discuss such properties with considerable confidence. Still it must not be forgotten that the problems they offer are all valency problems and that the nature of valency eludes us entirely at present.

"We are bound, therefore, to assume that a large proportion of the changes which occur in living organisms—which constitute vital Metabolism—are directed changes. What is the nature of this directive power? We are already able to go far in explaining this, although our knowledge is mainly of analytical changes, the nature of synthetic changes being, at present, only inferentially disclosed to us.

"It has long been known that under natural conditions many complex substances are broken down by the co-operations of enzymes; the effect produced by these enzymes is precisely similar to that of acids, except that all acids produce the effect, acting only with different degrees of readiness, whilst enzymes are strictly selective, a given enzyme acting only as a rule, either on a single substance or on a series of substances similar in structure. Indisputable evidence has been obtained that the enzymes which act on the carbohydrates are intimately related in structure to the compounds which they attack, fitting them much as a key fits into a good lock; the slightest alteration in the structure of the carbohydrate is sufficient to throw the enzyme out of action. The relative positions of the simple hydrogen atom attached to the carbon atom are merely interchanged, yet this is sufficient to render the one proof against the action of emulsin—the enzyme of the almond—the other proof against that of maltase—the enzyme present in yeast.

"Although there can be little doubt, in the case of plants and animals, that the synthetic processes do not occur spontaneously and directly between the interagents but are for the most part at some stage or other directed or controlled, it cannot well be supposed that every asymmetric compound is the direct outcome of a controlled process; nor is it necessary to assume that such is the case.

"The general impression produced by facts such as have been referred to is that directive influences are the paramount influences at work in building up living tissues. These came into operation, it is to be supposed, at a very early stage in the case of the plant.

"But taking into account the very different proportions in which products are formed of different origin, it is clear that the several sections of the molecule must be differently ordered in the different proteins; again, therefore, it is necessary to assume that the formation of such substances is directed. We may picture molecule after molecule as 'being brought into line' against a template and the junctions which are required to bind the whole series together as being made through the agency of the enzymic dehydrating influence before referred to.

"The general similarity of structure throughout organized creation may well be conditional primarily by properties inherent in the materials of which all living things are composed—of carbon, of oxygen, of nitrogen, of hydrogen, of phosphorus, of sulphur. At some early period, however, the possibilities became limited and directed processes became the order of the day. From that time onward the chemistry pervailing in organic nature became a far simpler chemistry than that of the laboratory; the possibilities were diminished, the certainties of a definite line of action were increased. How this came about it is impossible to say; mere accident may have led to it. Thus we may assume that some relatively simple asymmetric substance was produced by the fortuitous occurrence of a change under conditions such as obtain in our laboratories and that consequently the enantiamorphous isomeric forms of equal opposite activity were produced in equal amounts. We may suppose that a pool containing such material having been dried up dust of molecular fineness was dispersed; such dust falling into other similar pools near the crystallization point may well have conditioned the separation of only one of the two isomeric forms present in the liquid. A separation having been once affected in this manner, assuming the substance to be one which could influence its own formation, one from rather than the other might have been produced. An active substance thus generated and selected out might then become the origin of a series of asymmetric synthesis. How the complicated series of changes which constitute life may have arisen we cannot even guess at present.

"The ovum and the spermatazoon must be supposed to have all the directive influences stored up in them which are subsequently brought into play in the development of the organism; they may be looked upon as bundles of templates of very definite structure.

"The manner in which development proceeds must depend (1) on the fundamental properties of the constituent primary units—that is to say, the elementary atoms; (2) on the structure of the germinal masses; (3) on the available primary food materials; and (4) on the character of the operative enzymes, whose work it is to incorporate into the protoplasmic complexes the scattered elements as they come into position on the various templates the nuclei afford.

"It would seem that control is exercised and stability secured in several ways; not only is the form laid down in advance, but certain chosen materials are alone available and the builders can only unite particular materials in particular ways."

COMMENTS ON PROF. ARMSTRONG'S LECTURE

"Function and structure are most closely connected." This is a high order of biologic science: each structure acts according to the original plan; it must function as it actually does in all organic beings. But this is proof absolute of directivity; the eye was directed to see. It is impossible that a structure shall function without having been directly formed for that purpose. Thus a microscope aids vision because it was made to aid sight.

"The nature of valency eludes." True, none knows what chemical affinity, or atomic attraction in the process of uniting to form compounds really is. But this is known, the equivalence, the invariability of set and fixed combining numbers of atoms in elemental molecules, is one of the most profound displays of mathematics in the entire realm of Nature. Every atom in every molecule has been counted without error. Since chemistry was set upon the rock of definite proportions, valency has been the admiration of all physicists, chemists and mathmaticians.

"Changes in vital metabolism are directed changes." And this was spoken by one of the chief chemists in the world, vice-president of the British Association, so late as September, 1909! I was not aware that the word directivity had been used by Professor Armstrong when I began writing this work. To repeat: "Vital changes are directed changes." This satisfies my contention; and all the more in that this

word directed was used by a great chemist when speaking on the subject of biological chemistry—the chemistry of the living.

Here was an auspicious opening for the insertion of the word Mind, but it does not appear. The words analytical and synthetic are written, however, but the only entity able to perform these is Mind. Read carefully the quotation regarding the wonderful enzymes—ferments. They are fitted to the compounds which they attack as a key to a lock. The word selective is employed. In the large book whence this quotation was made, there are two diagrams of molecules of two different compounds. The atoms are the same in each but a slight change in position occurs, represented to the eye thus: CH3O.CH for one, and HC.OCH3 for the other. This exceedingly minute difference in place merely of carbon, hydrogen and oxygen atoms completely prevents the actions of the enzymes—the key does not fit the lock. Now this positively is due to the action of Mind. The Mind that formed these compounds from atoms and molecules that had been formed of electrons.

"The general impression produced has been referred to directive influences." And this highly important statement made by a chemist of great skill—not by a mere metaphysician. And more: "These came into operation at a very early stage in the case of the plant."

Very early indeed, since these influences were the first.

Still more: "It is clear that several sections of the molecule must be differently ordered, therefore it is again necessary to assume that the formation of such substances is directed." My object in publishing this book is to advocate this very doctrine. For the three basic words formed, ordered, and directed, are written by Armstrong. Absolutely and positively the only entity in existence, able to form, order and direct, is Mind. Matters, in the inherent nature of the entire Universe, of of man, of language, of thought, cannot be otherwise. Mind and Mind only has potency and power to do these things.

THE TEMPLATE

"We may picture molcule after molecule as 'being brought into line' against a template." It is doubtful if all the books on chemistry ever published, if carefully examined would be found to contain a more remarkable statement than that molecules are brought into line against a template. What consumate skill was used, what complete search of language in the discovery of a word to substitute for the compound word Mind-form. The chemist, so it appears to me, in the midst of his analysis came to a point where the existence of a form, design, outline, mold, pattern or specification was an absolute necessity in the formation or building of a molecule. Whether the Professor thought of the term Mind-form is not known to me. At all events the word template was selected. Template is from the Latin templated, vaulted, from templum, a small timber. As used now, it means a mold used by bricklayers and masons in cutting or setting out their work.

Then atoms being formed into molecules, and molecules into elements, is comparable to a wall being formed by bricks being lined up against a template. But a template is a guide, or rule, comparable at least, to one line in a Mind-form pattern or design. If the substitution of a form designed by Mind for the word template be metaphysical, "so mote it be." In the sentences quoted from Professor Armstrong leading up to the wonderful word LIFE, are written the words: "organized creation"; "carbon, oxygen, nitrogen, hydrogen, phosphorus, sulphur; directed processes the order of the day; simpler chemistry; certainties of a definite line of action increased; mere accident may have led to it; fortuitous occurrence of a change; isomeric forms; dried up dust; influence its own formation; asymmetric synthesis" and finally "life." These words then are followed by this next sentence:

"The ovum and the spermatozoon must be supposed to have all the directive influences stored up in them . . . in the development of the organism, may be looked upon as bundles of templates.

The rock-based truth is that the first ovum of any one kind of living being contained the original directive influence, the successors of this first ovum is now on earth if the kind exists, and will exist without a trace of change in orginal specification so long as the kind, type, genus, species, class or division

exists on this planet. The words "bundles of templates" I would change to primordial Mind-forms. The sentence: "Various templates the nuclei afford" is not understood. How can ultra-microscopic nuclei "afford templates"? The theory as understood is that the nuclei arranged themselves along the straight edges or lines of the templates. "Stability was secured in several ways; (one being) the form laid down in advance." The only power that exists or can exist, able to lay down a form in advance is Mind.

BEGINNINGS OF LIFE

By Clement A. Whiting, Sc. D., D. O., Chairman of the Faculty of The Pacific College of Osteopathy, Los Angeles, Calif., U. S. A.:

"The lowest forms of life with which we are acquainted are the unicellular plants and animals.

These vary in size from those which can almost be seen with the unaided eye down to those which tax the highest powers of the modern microscope. Indeed there is increasing reason to believe that many of these forms of life are entirely below the power of microscopic vision. It is quite possible that the reason why the organisms producing smallpox, mumps and a few other diseases have not yet been discovered is because they are too small to be seen with the microscope. When we remember that it is quite possible to magnify an object to four or even five million times its normal area, it gives us some idea in regard to the inconceivable minuteness of these forms of life.

Between those forms which are clearly vegetable and those which are clearly animal, there is no sharp line of demarcation. It appears to the biologist of the present day that both plants and animals sprang from a common source and that as life became more complex, some of these primitive forms branched off in the direction of the vegetable and others which became more profoundly modified branched in the direction of animal life.

Even among these primitive organisms, it is possible to recognize some which belong to a progressive type and some which are more or less degenerated in structure and form. It is no easy matter to give a satisfactory definition of either a plant or an animal. The higher forms are so different that

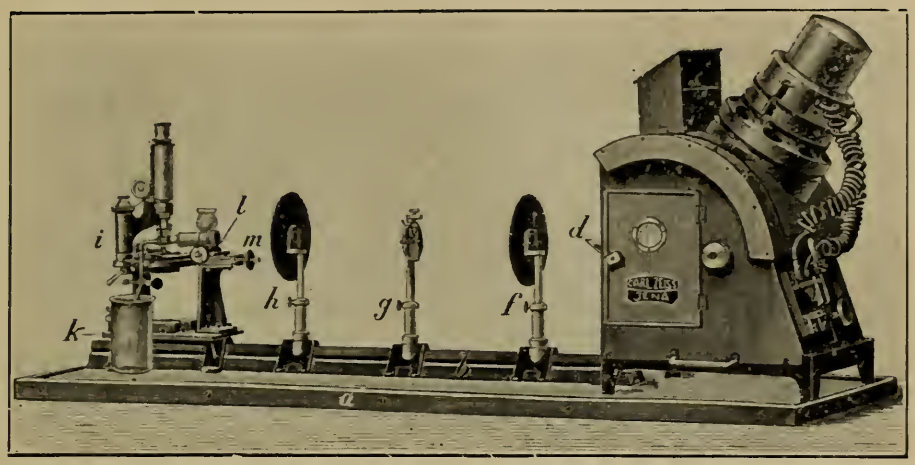
one would have little difficulty in distinguishing between them but as one studies the lower forms, he finds that his distinction must either be largely arbitrary or that he must make explanation of his definitions. In a general way it may be said that plants are characterized by having cell walls composed of cellulose while the animal cell is enclosed either by an albuminous envelope or is totally without such a bounding membrane.

But there are many exceptions to this general definition. The modern biologist regards it as somewhat of a waste of valuable time in many cases to undertake to say definitely as to whether a given form is animal or vegetable. It is much more in harmony with his habits of thought and with his conception of the value of study to spend his time in finding out the nature and structure of a given organism rather than settling the purely academic question of its classification.

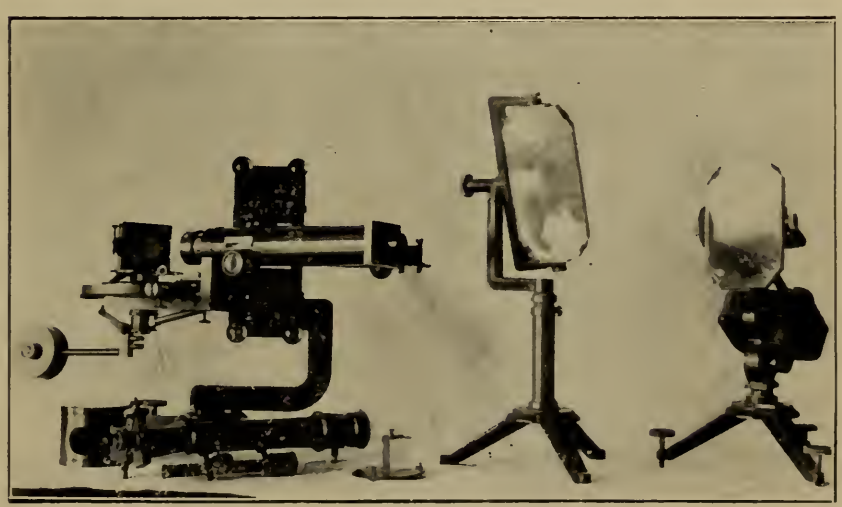
From the days when philosophy flourished in Athens up to the present time, no question has been regarded as more important than the question of the origin of life. After 2500 years of thought and study and research, we are not much better prepared to discuss this question than was Aristotle or Plato. It has been impressed upon us that there is a great continuity in nature and it is impossible for the modern thinker to suppose that the introduction of life was a serious interruption in the orderly progress of nature. When life first appeared, we may feel reasonable sure that it was in strict harmony with the progress which was going on at that time. With the development of life, came boundless opportunities for progression. Living things were in a state of unstable equilibrium both chemically and biologically and at least two methods of progress became possible.

The unstable chemical condition of living things made small changes absolutely inevitable and whenever these changes were of such character as to better fit the organism for its environment, it will be readily seen that that fortunate organism would not only stand a better chance to survive but that by surviving, it would leave a great number of descendants then some closely allied form which did not fit its environment quite so accurately.

Development proceeding from the accumulation of these minute characteristics, is spoken of as development by evolution and almost all biologists agree in recognizing this as



Slit Ultra-Microscope—For examination of colloid solutions. By Carl Zeiss, Jena, Germany. This microscope makes use of the energy waves, in the ultra-violet regions of the solar spectrum. The objects are subjected to dark-ground illumination. Living bacteria moving in liquids are rescued from the realms of the unseen and photographed. Collodial—jelly-like creatures, invisible in ordinary mircroscopes are brought into the range of the sensitive plate.



Instruments in the Lowe Observatory—Spectroscope on the left; Heliostat, right, and mirror in the center. For study of the Fraunhofer lines in the spectra of the sun and stars.

one of the most important factors in the development of life in its many forms on the earth. But it appears that the unstable equilibrium of organic beings is occasionally manifested by some great change which takes place in a single generation. These marked changes are spoken of as mutations and it is quite probable that the vast majority of mutations are so unfortunate for the individual that he either does not survive, or if he does survive, he leaves few or no descendants to inherit his unfortunate peculiarity. On the other hand, it may occasionally happen that some condition is of such a fortunate type that the individual may not only be able to survive but may possibly give rise to a race that would have an especial advantage in the struggle for existence.

It is a matter of the most common observation that the certain peculiarities of one generation are transmitted to the next. Because this is true, some superficial observers have jumped to the conclusion that all peculiarities are thus transmissable. More careful study has shown that there is a very definite law governing inheritance and that such characteristics as the individual may acquire are never transmitted while congenital characteristics may be transmitted, but as before stated, transmitted in harmony with a law of inheritance which is rapidly becoming well understood.

Until very recently all observation bearing upon inheritance had been made upon the higher forms of animals and plant life. More recently careful attention has been given to the lower forms of life and it is probable that the same laws which govern the inheritance among the higher organisms control the inheritance among lower species. The slight variations occurring among animals and plants of the same species may give rise to either a higher degree of development or to degeneration. No one can look much below the surface of nature and fail to recognize the fact that every individual animal and plant has to make a fierce struggle for existence. Pages of space may be saved by saying that modern biologists conceive of this struggle as being somewhat like the struggle which the young man or young woman cast alone and unfriended in a large city would be obliged to make, in order to secure the means of living. Whether such an one by reason of this struggle develops into a valuable citizen or an inhabitant of the slums would depend upon a variety of circumstances, but it is easy to see that as a result of the struggle,

the person would be forced either up or down. Those plants or animals which in the struggle for existence are forced down are spoken of as degenerate forms and those which are able to press upward, are the advancing or progressive forms. Whenever an animal or a plant in this struggle finds some easy way of living, it almost invariably results in degeneration. Those worms and other forms which having adopted the parasitic habit and learned to live in the alimentary canals and the flesh of the higher animals, exchanged all possibility of advancement and development for safety. Many times in the history of the human race, man has exchanged the possibility for intellectual advancement for what he considers safety. Whenever he has done this, he has brought upon himself intellectual degradation.

We have no reason to believe that conditions which can originate life longer exist upon the earth. From the very nature of things, we can not positively know this to be true but it is safe to say that there is no reason for believing that spontaneous generation ever occurs at the present time. Closely associated with degeneration is regeneration or the power of the living organism to supply those parts which have been intentionally or accidentally removed. In a general way it may be said that plants possess much greater power of regeneration than animals and the lower animals possess much greater power of regeneration than do the higher animals. Thus many trees are quite able to regenerate all missing parts when a slip is stuck in the earth and placed under conditions favorable for growth. The salamander is capable of regenerating an entire leg. In the bodies of the higher animals the power of regeneration is reduced to the ability to supply epithelial cells as fast as they are normally desquamated from the body and to some extent to regenerate connective tissue, this latter is well seen in the healing of wounds.

The lower organisms both among plants and animals readily react to the stimulation of light, heat, colour, chemicals and gravity. Those that are attracted by any of these forces, are said to react positively, the others to react negatively. In this reaction there is no reason for believing that the power of choice, as that is understood among the higher organisms, plays any part whatever, and yet it is probable that from this lowly beginning the mind of man has had its development. It is probably safe to say in the light of present knowledge that

scientific psychology must rest upon a foundation derived from studying the activities of the lower forms of animal life and perhaps the lower forms of plant life."

From the London Lancet:

"Upon consideration of the relation of hybridism to natural selection, it would doubtless seem that the theory of evolution, as it is commonly accepted to-day, is in need of additional proof and extensive explanation. For the almost uniform sterility of hybrid animals is indeed a singular comment upon the great theory of natural selection. Hybrids have never been brought to reproduce themselves naturally without artificial crosses. Whenever one of the productive elements predominates the other is lost. Thus we are brought to recognize the independent character of the specific types and the impossibility of originating a new and independent form. A fundamental law of Nature, which alone maintains the order and fixity necessary in the domain of life; for without this law we should have only a chaos of non-coherent and changing forms.

Reviewing the facts of natural selection from the standpoint of the sterility of hybrids, how is it that hybrids in their natural unproductiveness present to us Nature's limitations, the boundaries of which we cannot pass? Who or what fixed these bounds, and why should they be fixed in the natural order of things? The answer is that these facts show us as plainly as anything that can possibly do so, that he who runs may read, 'Here the limits have been placed by the mental on the physical.' Or should we assert the contrary, and dare to ask if Nature can place limits on herself? Or is she so free of action that while she is under necessity hard and fast, she can yet limit herself? Or is it the necessity that limits? Where then is the necessity of fruitless hybridism under a system in which all are linear relations?"

To all these questions one answer, and only one, can be given, and this is that the limitations here are Nature's limits only because, as a great philosopher says, they are Mind limits first; and so certain Minds will not unite in fruitfulness, so will not bodies from them. For under a system of distinct and graded Mind-forms, this fruitfulness is intelligible; in an absolutely free-love nature is unthinkable. Hybrids themselves—in the very first-hand crosses—are unprocurable natu-

rally. There is no reason why bodies of various kinds should not unite without let or hindrance, for matter is homogeneous and organisms form a common cell. If indeed, as some assert, the physical were the all-in-all, Nature's limits would be absolutely abolished. But this is not the case, for as long as we abide in Mind-limits we will not be troubled very much to account for physical, bodily limitations."

Thus actually, the impressive terms "Mind-limits," "Mind-forms," "mental," are used in the chief medical journal of the world. Can it be possible that a new era is dawning? And that Mind is finally to be recognized?

It is true Nature's idiographs, thought-forms, Mind-models, Mind-patterns, Mind-limits, Mind-plans, Mind-designs, were written in the beginning of each life-form, type, kind, genus, species, class and division, to endure as such from the instant of beginning to that of the end on this planet. Hybrids do not endure. If they did the inhabitants of the earth, all its forms of life would soon be in an inextricable jumble and confusion. The permanence of a thought-form, mentoid, expressed in life is about as lasting as are the azoic rocks of the globe.

THE SURPASSING MYSTERY OF PERSONALITY

Now that strictly scientific methods, those in hourly use in all of the great standard sciences, are applied to researches in the majestic science, mentonomy, the deep-seated mystery of personality has become deeper and wider than before. In the present state of mentology, students are all at sea as to the nature of the human personality—the mind within man. All that can be done now is to study with critical care and assiduity the phenomena and activities of mind under all conditions, whether in health or disease, secure data, and then attempt to formulate hypotheses.

So intense is the disappointment at not being able to detect a trace of fact as to the nature of the human mentality that one not a true investigator might well be discouraged. But chagrin and discomfiture have not appeared, the exploration is now being maintained with all the earnestness of search for the poles of the earth amid sinister and forbidding wastes of snow and ice.

So far as humans are concerned, the center of the universe for each lies within the personality. If the universe, composed of space and matter, has infinite dimensions, than an eye anywhere occupies the center. Assume a diameter for the universe, say of fifty quadrillion miles, then this magnitude is practically infinite to any human mentality, even that of any one of the world's mighty mathematicians, trained to think with persistent continuity, yet totally unable to think of personality, of Mind. Thus any mathematician can weigh the sun and stars, but cannot think how he is able to take up a pencil or pen. The astonishing fact stands out: we cannot think of any mental entity. We cannot even think of our own selves. Really, all the sentences here being written are involved in obscurity. Thus the sentence, "We cannot think of ourselves," cannot be explained. We know nothing of our own mysterious self, person, personality, Mind, mentality or the entity within—the life and Mind. For we cannot establish thoughts of Mind and life. The terms, "we," "our own," are beset with obscurity. We cannot discover ourselves. One can not discover self, yet it is rigidly maintained by some mentonomists that we can hold an argument with selves, ourselves, with our personality. The reader will observe the word "our" here; but this implies ownership. "It took him a minute to make up his Mind," is a common expression, but the ablest mentonomist cannot explain it, nor can he decide if the expression is correct. Who made up whose Mind? Who is owner, and what does he own? No doubt something could be done if we could find where to begin. If we could secure one hint, or faint suggestion, as to what the personality within really is like, then this could be followed and it might lead to some discovery. If not, then the nature of the human personality is unknowable. I dislike to use the word unknowable, especially when standing before the imposing facade of the temple of modern mathematics, the master science.

In the study of Nature, in the formulation of a set and fixed science, there is always some unguarded place, a vulnerable point opening to an avenue of research; but none has been found in this seemingly impenetrable science, the science of the Mind. We cannot form even a theory of what Mind is. It is so absolutely unlike matter, or any of its known properties, that it is unthinkable. The throne-room of the personality is in the brain; but only a fraction of the brain is the

seat of Mind. Mind functions in tissue, and this process is the mystic personality. This word functioning always creeps in although inexplicable, unless the Mind is capable of activating outside of a brain. When Mind enters and sets up a succession of thoughts, then the word functioning is admissable. This is an obscure way of saying that a personality can exist and manifest outside of the human brain and system of nerves. And the literature making this assertion is increasing all over the world by leaps and bounds. This is a striking mentological fact in itself. Since the art of writing appeared, the human personality has not been held in such high importance as at present. And its study is inextricably involved in physical sciences as well as mental. When a person is engaged in an argument with another part or division of itself, the fact is known, but with whom is the original self conversing?

Sub- and super-minds are untenable, subliminal and subconscious, likewise. An entity, a person conversing with another, in another part of the brain, or the speaker in one lobe of the brain speaking to another in the other lobe, is not probable, for half of the brain is supposed to be quiescent. A hyper-mind manifesting to the ordinary working Mind does not clarify this problem. A duality of the reasoning faculty may be offered as an explanation; but two personalities would seem to be required. Go reason with yourself, is a recondite expression. He was actually beside himself is a common assertion; but who will arise and explain it? Mental duality is implied in all these expressions. I wounded my hand; I injured my Mind; are two statements totally beyond hope of explanation in the present state of mentonomy. The human Mind is marvellously complex, intricate and elaborate, beyond its own powers of imagination. The emotions alone are great enough to be combined into a person. The emotional phases of Mind are more intricate, delicate and refined than are the infinite variations in hues and tints in the solar spectrum.

A DOMINANT IDEA

What may be said of a dominant idea? A dominating thought, or series of thoughts, present cases of most formidable power in a personality at times. This force is actually able to overcome the strongest will; that is, the Mind will dwell upon one subject for hours and days; one persistent

idea no matter how unwelcome, in defiance of the thunders of the central will against it. The thought- train may be displeasing in the extreme to the personality, yet the will is helpless. to cast out, escape or still the mental tempest. Then the brain as an instrument of manifestation of the very self, the apparently real person, when the Mind goes racing seems to be in the clutch of an external mental entity stronger than the governing will. For the dominant thought force is one of the inscrutable enigmas encountered by the highest research in mentonomy. No words in any language known, can describe a human personality. Sanskrit roots and Greek and Latin branches are useless. This because the ancients knew no more than we moderns of the Mind. Suppose one fact should be discovered of the nature of Mind: then a new word would be necessary to name it. Self, personality, ego, will, emotion, reason, consciousness, thought, Mind, I, myself, my Mind, are all words whose meanings are as completely unknown as are the immeasurable distances of Canopus and Polaris. If even a tentative mentonomy could be set up, some help would be had; but how can this be when Mind is unable to think of Mind? What is personified? Is an infinite number of assembled thoughts a personality? Mystery deepens, for the word persona is Latin for the English word mask. Well selected indeed, for at present the human personality is hidden behind a veil absolutely impenetrable.

By Mrs. Mary T. Longley, Washington, D. C.

"Mind is potential, a cosmos within itself. It possesses all the potency of Universal Intelligence and Infinite Thought, but limited by the conditions of individual expression. Mind is the product of co-ordinated elements and of electro-magnetic forces vitalized by the quenchless flame of life. Man physical, is a network of nerves along which the living force or impulse plays, resolving itself into countless forms of sensation, yet interwoven therein by its influence and power, is Mind: the potential electro-magnetic activity and consciousness in the realm of objective expression, as well as in the subjective.

Tremendous, yet subtle forces move the Universe. Mystery to the casual observer is apparent everywhere; but to the enlightened and intuitive, these secrets of life are clear, and as revelations of truth. In mental illumination mystery disap-

pears in the light. Mind per se, is limitless in scope and in power of expression. But in contact with organized matter as in the anatomical human structure, may and does become confused in its efforts to clearly demonstrate intellectual diversity under these limited conditions.

"Sub-conscious Mind"; "super-conscious Mind," are expressions that have been coined by searchers after truth; but they simply express their bewilderment over the diversity of expression through one and the same human brain. And these instanced at times in persons of unusual experiences, and characteristics. These bewildered teachers are often cultured, careful in methods of concentration and in close analysis in all physical studies; yet mystified when analyzing mental phenomena. Such teachers applying physical laws to mental research soon find themselves in a Mind-maze, and lead others into the entanglement, when they attempt to explain mental experiences and variations upon the theory of duplex or triple Minds. And when they affirm that the "sub-conscious Mind," the "normal Mind," and the super-conscious Mind," act independently of each other, when experiences of human beings and expressions of intelligence appear of different qualities on special occasions. Mind is a unit: there is but one Mind, which, however, does have varying and differing states of consciousness and expression. The superior state is one of illumination in which the intuitive faculties of the ego are quickened into wide perception; and in its expression Mind can then be said to be in its super-conscious condition. When in the purely carnal state, or when in confusing tangles of experience and sensation, and abnormal influence, the Mind can then be said to be wrestling with the rubbish of a gloomy cellar and in a sub-conscious state. When dealing with the ordinary affairs of life, in its usual manner of work and judgment, the Mind is in its normal state.

Mind is king, and the mazes it encounters in physical elements, as in human organisms, are the creations of contending forces, as crossed wires, mental rubbish and ignorance, only cleared by education, by knowledge, and applied wisdom. Questions that have been the despair of the ages will be correctly solved by the dawn of the new era of understanding. The Mind-maze will be followed through all its intricacies to a legitimate conclusion; and to an interpretation of Life, such as the world as not hitherto known. Man, the ego, can

learn how to apply all forces at his command to the regulation of his mental states and bring them into subjection, in every department of labor, thought and life. And thus provide ways and means for the highest intellectual expression of that great potency, that energy which man calls Mind."

August 8, 1911.

RECENT SCIENCE

From address of Professor J. J. Thomson, president of the British Association for the Advancement of Science, delivered at the 79th meeting, held at Winnipeg, Manitoba, August 25-September 1, 1909:

"Roentgen, in 1895, showed that when electricity passed through a vacuum tube, the tube emitted rays which could pass through bodies opaque to ordinary light; which could, for example, pass through the flesh of the body and throw a shadow of the bones on a suitable screen. It is not, however, to the power of probing dark places, important though this is, that the influence of Roentgen rays on the progress of science has mainly been due; it is rather because these rays make gases, and, indeed, solids and liquids through which they pass conductors of electricity.

"The study of gases exposed to Roentgen rays has revealed in such gases the presence of particles charged with electricity; some of these particles are charged with positive, and others with negative electricity.

"The properties of these particles have been investigated; we know the charge they carry, the speed with which they move under an electric force, the rate at which the oppositely charged ones recombine, and these investigations have thrown a new light not only on electricity, but also on the structure of matter.

"We know from these investigations that electricity, like matter, is molecular in structure, that just as a quantity of hydrogen is a collection of an immense number of small particles called molecules, so a charge of electricity is made up of a great number of small charges, each of a perfectly definite and known amount.

"We have measured the charge on the unit and found it to be the same from whatever source the electricity was obtained.

"The molecular theory of matter is indebted to the molecular theory of electricity for the most accurate determination of its fundamental quantity, the number of molecules in any given quantity of an elementary substance.

"The great advantage of the electrical methods for study of the properties of matter is due to the fact that whenever a particle is electrified it is very easily identified, whereas an uncharged molecule is most elusive; and it is only when these are present in immense numbers that we are able to detect them.

"The smallest quantity of unelectrified matter ever detected is probably that of neon, one of the inert gases of the atmosphere. The amount of neon in 1-20 of a cubic centimeter of air can be detected by the spectroscope, and the neon in air amounts to only 1 part in 100,000 parts of air, so that the neon in 1-20 cubic centimeter of air would occupy a volume of half a millionth of a cubic centimeter, but in this small volume there are about 10,000,000,000,000 molecules. Contrast this with our power of detecting electrified molecules. Rutherford has shown that we can detect the presence of a single a particle. Now the a particle is a charged atom of helium; if this atom had been uncharged we should have required more than 1,000,000,000,000 of them instead of one, before we should have been able to detect them.

"We may, I think, conclude, since electrified particles can be studied with so much greater ease than unelectrified ones, that we shall obtain a knowledge of the ultimate structure of electricity before we arrive at a corresponding degree of certainty with regard to the structure of matter.

"We have already made considerable progress in the task of discovering what the structure of electricity is. We have known for some time that of one kind of electricity—the negative—and a very interesting one it is. We know that negative electricity is made up of units all of which are of the same kind; that these units are exceedingly small compared with even the smallest atom, for the mass of the unit is only 1-1700 part of the mass of one atom of hydrogen; that its radius is only 1-10,000,000,000,000 centimeter, and that these units, 'corpuscles' as they have been called can be obtained from all substances. [This metric number reduced to English measure is that a row of electrons side by side one inch in length would contain 12,700,000,000,000.]

"The size of these corpuscles is on an altogether different scale from that of atoms; the volume of a corpuscle bears to that of the atom about the same relation as that of a speck of dust to the volume of this room. Under suitable conditions they move at enormous speeds which approach in some instances the velocity of light.

"The discovery of these corpuscles is an interesting example of the way Nature responds to the demands made upon her by mathematicians. Some years before the discovery of corpuscles it had been shown by a mathematical investigation that the mass of a body must be increased by a charge of electricity. This increase, however, is greater for small bodies than for large ones, and even bodies as small as atoms are hopelessly too large to show any appreciable effect; thus the result seemed entirely academic. After the corpuscles were discovered, and these are so much smaller than the atom that the increase in mass due to the charge becomes not merely appreciable, but so great that the whole of the mass of the corpuscle arises from its charge.

"We know a great deal about negative electricity; we know that by sitable processes we can get corpuscles [electrons] out of any kind of matter, and that the corpuscles will be the same from whatever source they may be derived. Is a similar thing true for positive electricity? Can we get, for example, a positive unit from oxygen of the same kind as that we get from hydrogen?

"For my own part, I think the evidence is in favor of the view that we can, although the nature of the unit of positive electricity makes the proof much more difficult than for the negative unit.

"In the first place we find that the positive particles, which are found when an electric discharge passes through a highly rarefied gas, are, when the pressure is very low, the same whatever may have been the gas in the vessel to begin with. If we pump out the gas until the pressure is too low to allow the discharge to pass, and then introduce a small quantity of gas and restart the discharge, the positive particles are the same whatever kind of gas may have been introduced.

"These and similar results lead to the conclusion that the atom of the different chemical elements contain definite units of positive as well as of negative electricity, and that the positive electricity, like the negative, is molecular in structure.

"The investigations made on the unit of positive electricity show that it is of quite a different kind from the unit of negative; the mass of the negative unit is exceedingly small compared with any atom; the only positive units that up to the present have been detected are quite comparable in mass with the mass of an atom of hydrogen, in fact they seem equal to it. This makes it more difficult to be certain that the unit of positive electricity has been isolated, for we have to be on our guard against its being a much smaller body attached to the hydrogen atoms which happen to be present in the vessel.

"A knowledge of the mass and size of the two units of electricity, the positive and the negative, would give us the material for constructing what may be called a molecular theory of electricity, and would be a starting point for a theory of the structure of matter; for the most natural to take, is that matter is just a collection of positive and negative units of electricity, and that the forces which hold atoms and molecules together, and the properties which differentiate one kind of matter from another, all have their origin in the electrical forces exerted by positive and negative units of electricity, grouped together in different ways in the atoms of the different elements.

"As it would seem that the units of positive and negative electricity are of very different sizes, we must regard matter as a mixture containing systems of very different types, one type corresponding to the small corpuscle, the other to the large positive unit."

CROOKES' ORIGINAL DISCOVERY, IN 1878

"Probably the most remarkable contribution to modern science that the present year has witnessed is the paper "On the Illumination of Lines of Molecular Pressure, and the Trajectory of Molecules," by Mr. W. Crookes, F. R. S., read at the meeting of the Royal Society, on December 5, 1878. Last year Pictet and Cailletet solidified what are known as the permanent gases, and now Mr. Crookes has demonstrated the fact that, under certain conditions, gases may become so far changed, both in physical constitution and properties, as to form a fourth state of matter. Just as below the gaseous state there is the liquid and the solid, so above the liquid there is the gaseous, and the ultra-gaseous, ethereal. The setting up by electrical means, of an intense molecular vibration in a

disk of metal excites the surrounding gas. With a dense gas, the disturbance extends a short distance only, but as rarefaction continues the layer of molecular disturbance increases in thickness. When connected with the electricity, a halo of velvety violet light is seen. At very high exhaustions (known as Crookes' vacua measured by a few millionths of an atmosphere) the dark space becomes so large as to fill the tube. The dark violet focus is still visible to the careful observer. If now a more perfect vacuum is obtained, the whole bulb becomes illuminated with a beautiful phosphorescent light. Crookes said: "The thickness of the dark space is the measure of the mean length of the path between successive collisions of the molecules. The extra velocity with which the molecules rebound from the excited negative pole keeps back the more slowly moving molecules which are advancing toward the pole. When the exhaustion is sufficiently high the swiftly moving rebounding molecules spend their force, on the sides of the vessel, and the production of light is the consequence of this sudden arrest of velocity." The theory propounded at the conclusions of the experiments is one of the most remarkable discoveries of modern times, involving as it does a fourth state of matter; the matter becomes exalted to an ultra-gaseous state when phenomena are seen, hitherto unknown and at present not comprehended. The phenomena discovered by Mr. Crookes in his exhausted tubes reveal to physical science a new world—a world where for instance the corpuscular theory of light holds good, but where "we can never enter, and in which we must be content to observe and experiment from the outside." From the English Mechanic, London, Dec. 27, 1878, p. 383.

Here then is an excerpt from the original lecture; now historic and to remain high on the summit of science for all time. Crookes called the excessively attenuated matter flowing along with the high pressure electricity in the tubes from which all air possible had been removed, a fourth state. I would here substitute the word first for fourth. But with this understanding, the atoms and molecules of Crookes do not constitute the actual fourth state until broken up into electrons as was accomplished by J. J. Thomson in 1899.

The added results of using ultra-violet light for the purpose of photographing invisible objects are that short wave-lengths, not available in daylight work, are utilized. Thus in the

microscopic cameras here pictured, the powers are doubled when using waves beyond the violet portion of the solar spectrum. The power of an objective in white-light photography is that many living objects which display no color in direct sunlight, and are difficult to see, and more difficult to photograph, are easily photographed by means of the very short waves. Thus immense numbers of hitherto unknown bacteria are photographed, and even when they are in rapid motion.

TIME, THE PERPETUAL MYSTERY

Since man began to think, to philosophize, to speculate to seek solutions of inexplicable riddles; time has ever been the most nearly complete enigma. The most intellectual in all ages have sought a definition of the word time. And the most brilliant minds have ever searched for words to convey the meaning of the word time to other minds. All have failed. Here are expressions taken from philosophical books, dictionaries, and lexicons.

Greek: Chroneo, to live; to be of sound Mind. Chronos, time. Chronizo, chroniso, chronio, chroneis, p. Kechronika, to endure for a long time, to grow old, to delay, to retard, procrastinate. Chronikos, relating or belonging to time, or the times, temporary, perishable, chronio, long duration; chronicles, or annals.

Chronios, chronio, chronion, of long duration, seasonable, long delaying, continuing, late, slow. All based on chronos, time. Also hora, hour, time, season, a certain time of life, a certain time of day or night; horia, the Hours, goddesses presiding over the seasons; horologion, an instrument to measure time and indicate the hours; from hora and logos. But logos is speech—thus, literally to speak the hours thought of ages before striking clocks. And horos, the year; time; night.

Latin: hora, an hour, a dial, clock, clepsydra, personified as the Horæ, daughters of Jupiter and Themis, but Themis was daughter of Cœlus and Terra—earth.

In the dictionary: "The general idea, relation or fact of continuous or successive existence; duration as comprising the relations known as past, present, and future, and furnishing the sphere of all activities and events; infinite duration or its measure. A moment, period, season, age, epoch, era.

A portion of duration allotted to some specific purpose, as portion of duration allotted to present order of things in the Universe considered as having a beginning and an end between two portions of eternity. Distinguished from eternity by a different mode of existence. To the consciousness of the thinking subject; also the metaphysical notion of duration."

Kant held that time is not objective but subjective. Others taught that time is an actual entity that in which phenomena endure; and Leibnitz wrote that time is a system of relations. Mathematics looks upon time as a continuous quantity flowing at a constant rate. This without breaks, spaces and dots or dashes.

But if the earth's specific speed of rotation should accelerate or retard, the rate of flow would change.

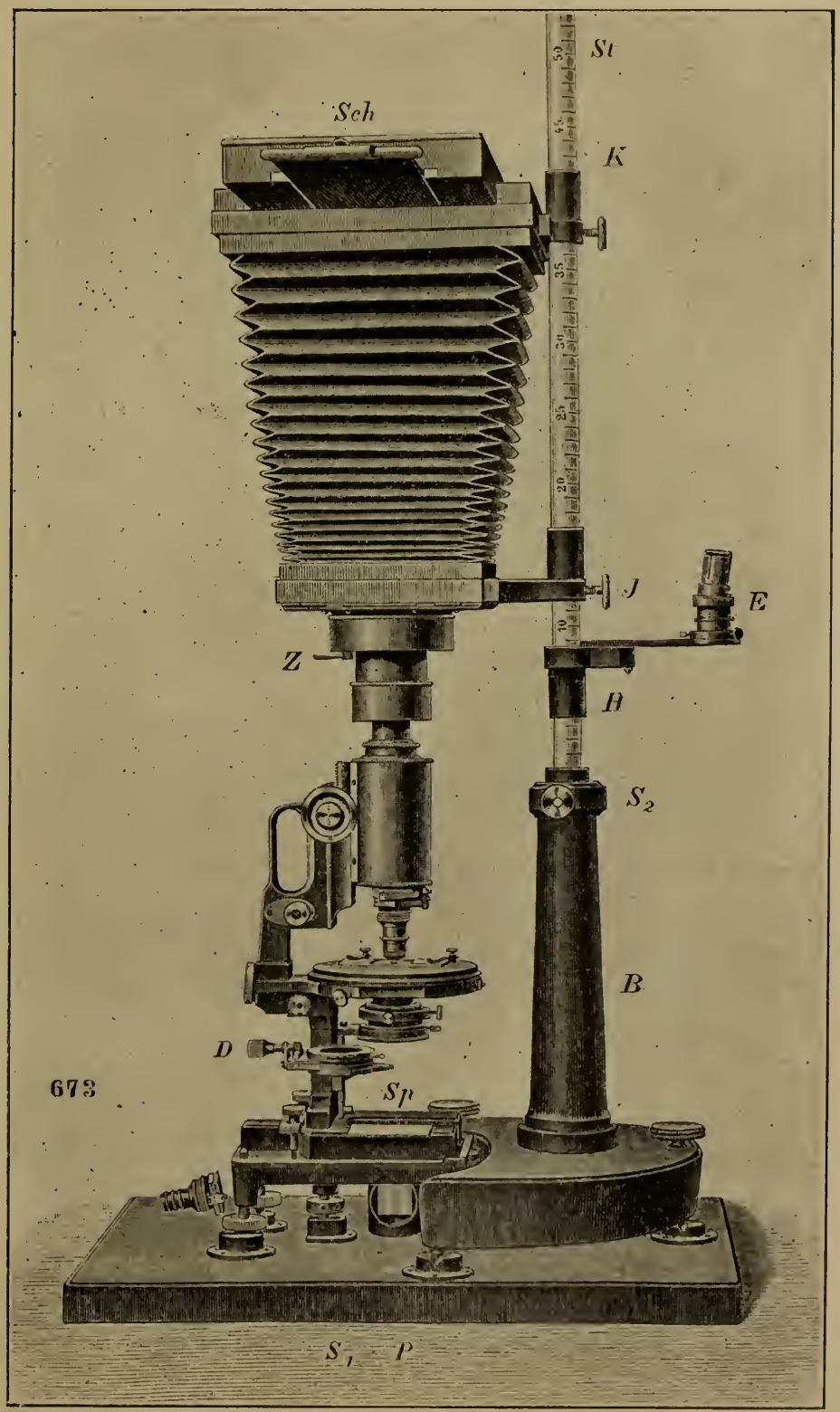
One of the most remarkable facts in thought and language is these expressions: A microscope magnifies 500 **times**; this stick is ten **times** longer than that; that river is three **times** wider than this. These are inexplicable. Why is the word **times** always introduced here?

But how does the Mind sense time; the lapse or flow of time? This has never been explained. Persons have been known to sense the passing of time when asleep. The time-sense, time-faculty in the phase or type of Mind functioning at present as human, certainly has a time-sense, time-knowledge. To express this most wonderful entity in terms of existence of life, I have adopted and written the word chrono-zoons, or time-zoons, time-lives, within our lives, living time-units in the brain, erronously called cells.

And in the dictionaries and in philosophies, a number of words are inextricably involved in describing space that are used in time definitions. Thus Kant, the great idealist, held that in its nature, space is purely ideal and without any objective condition of sensibility, or sensible experience. Also an actual entity, which though not an object of our senses is surely sensed. That is, we are aware of space. This is near the bottom of the Maze, the method of the Universe is similar to the plan of the Mind—Mind. The intuitions of the Mind in man cognize space. The expression appears in the Latin dictionary, space of time!

Then the ancient expressions: "Time existeth not;" "Time is unkonwn in space;" "Time is local on organic worlds," may all be true, in fact, are true.

Microscope and Micro-Photographic Camera—Manufactured by Carl Zeiss, Jena, Germany. This is the wonderful microscope so often mentioned in this work. The lenses are made of the world-famous Jena glass; and the reflecting prisms are of quartz. Objects so minute that microscopists a few years since would have thought it impossible to see, are brought into view and photographed. And these negatives can be again magnified. An unknown and unseen world was revealed by these admirable instruments.



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ENERGETICS

Heat, cold, and dryness can be withstood and survived by living beings to a remarkable degree. Varieties of moss-dwellers can be revived by moisture after they have been thoroughly dried. When dry the animals are latent or inert, dormant, and apparently lifeless, but they become re-animate when water is absorbed again. Dewar subjected micro-organisms to the appalling cold of liquid hydrogen and they survived. But when they were immersel in liquid air, ultra-violet light killed them. These minute creatures withstand heat and cold so much more intense than the human body could endure, that comparison is useless. How great is the mystery of life, how powerful is resistance to destructive extremes of temperature. The emission of light by bacteria brilliant enough to enable one to read, and also take photographs is common.

"Bacteria emit light which is produced entirely by themselves; independently of any extraneous light source; in fact, they grow and produce light better if kept entirely dark."

"Light production in living animals is essentially different from that of chemism, or of the phosphorescence produced by electrical means." "Phosphorescing chemicals in all cases have the power of absorbing light and re-emitting either of the same or of greater wave-length." Knowledge, May, 1911.

THOUGHT SPECIFICATIONS

Mind-forms, thought-forms, mental-force forms, formulas, mathematical equations, theories, hypotheses, these come and go leaving no trace of their origin; no clue as to how they were developed or whence they came. Nightly introspection and revision of each day's work, in search of possible errors in not following traces or clues have been made, but without success. No suggestion, no hint as to what Mind is has appeared. In the midst of my researches within the Maze, into its intricacies, complexities, and winding corridors, the Mind, the Original, has ever grown before me in majesty supreme. I here at the close of the volume state that I am more completely absorbed with the idea if possible, than at the beginning, that all forms in matter are thought-forms filled out from primordial substance-electrons. Let the stellar

structure crumble into chaos and ruin, but let not this concept perish from my set and fixed belief. Thought-forms are able to put on and put off matter like a garment. And at any place, or point in space whatever. Let the Creator desire to form a new sun in space, the desire which is a thought-form, is sent there to assemble local electrons. This, the reader may rest assured, is literal truth though reader and writer are both unable to comprehend. The Creator creates thoughts first; then electrons, and from these forms all things. Of course I am unable to comprehend. The meaning of this Latin word is to seize or grasp, together, lay hold of, catch, to take in with the Mind, to conceive, to understand, to comprise or set forth in writing, to express, describe, narrate, discover, disclose or detect. I cannot summon words, and if I could, I would fail in any attempt to put them together in any description of the sublime and forever supreme process of the Creator in creating a new thought and clothing it with electrons functioning as matter.

The word detect appears in the definition. And now as I write in this mountain observatory facing the east, early in the advancing day, in presence of the sun rising over distant peaks, and casting summer rays over land and sea; over flower and fruit laden plains below, and upon tossing waves of the Pacific Ocean; as I put crowding thoughts on paper it doth appear in forceful impression that I detect the fact of creation, sense it, feel it and know it to be true. For no eye can see unless the brain can preceive the thought-form.

THOUGHTS RELATING TO MAN

The complexity of the human organization, Mind, body, life, and their harmonic adjustment, with a precision when normal, rivaling that of mathematics, is so much more elaborate than has been deemed possible, that physiologists, bionomists and mentalists now see problems confronting them, that are transcendant, intricate and apparently insoluble. Thus the retina of the eye is a portion of the brain an exploring expedition of optozoons or retinozoons—the brain tissue itself come forth to see! The visible part of the Universe is so supremely magnificent, that the very matter of the brain came out of its prison of bone—the skull—to behold and convey impressions to sensing zoons within. The seeing

ones tell those in interior darkness of the beauty and wonders of the stars and starry vaults of the celestial sphere. And of flowers, and the warbling birds, of crystals, colors and of sparkling gems. These and the radiant sun, the brain came forth to see.

The complexity of new thought forms, inventions, discovery and application of natural law, as in machines ranging in dimension from that of a running watch one-fourth of an inch in diameter, set in a finger-ring, through all complexes in the wilderness of the patent office, to colossal engines and steam turbines in ocean liners, stamps man as an integer of the Infinite. Computing machines, where mechanism does mathematical work, procalim the might and majesty of man; and that Mind expressing in brain is not only similar, but actually like or a part of Original Mind. Exquisite works of art, sculpture, statuary, paintings, and gems of poetry and likewise prose—word-painting, creating, creating exalted imagery of thought,—these and more of the beautiful, refined and artistic, reveal that the phase of Mind manifesting in the human organism, is not different from, but a part of Mind. Behold the wonders of the wireless telegraph. A sinking ship sounds signals from mists and gloom of an ocean night, signals of distress calling for aid. Those on other ships hear the human cries for help. They hear latitude and longitude spoken in the blackness of night; instantly the prows of the distant vessels are turned toward the given position, full steam is turned on and the hurrying monsters rush to the rescue. This is a magnificent and impressive display of Mind.

A CATHOLIC VIEW OF EVOLUTION

"We must carefully distinguish between the different meanings of the words Theory of Evolution, between the theory as a scientific hypothesis and as a philosophical speculation; as based on theistic principles, and as based on a materialistic and atheistic foundation, between the theory of evolution and Darwinism, and between the theory as applied to the vegetable and animal kingdoms and as applied to man.

As a scientific hypothesis, the theory of evolution seeks to determine the historical succession of the various species of plants and animals on our earth; and with the aid of plantology and other sciences such as comparative morphology, embryology and bionomy, to show how in the course of the different geological epochs they gradually evolve from their beginnings by purely natural causes of specific development. The theory of evolution then, as a scientific hypothesis, does not consider the present species of plants and of animals as forms directly created by God, but as the final result of an evolution from other species existing in former geological periods. Hence, it is called "the theory of evolution," or "the theory of descent," since it implies the descent of the present from extinct species. This theory is opposed to the theory of constancy, which assumes the immutability of organic species. The scientific theory of evolution, therefore, does not concern itself with the origin of life. It merely inquires into the genetic relations of systematic species, genera and families, and endeavors to arrange them according to natural series of descent (genetic trees).

How far is the theory of evolution based on the observed facts? It is understood to be still only an hypothesis. The formation of a new species is directly observed in but a few cases, and only with reference to such forms as are closely related to each other; for instance, the systematic species of the plant-genus Œothera, and of the beetle-genus Dinarda. It is, however, not difficult to furnish an indirect proof of great probability for the genetic relation of many systematic species to each other and to fossil forms, as in the genetic development of the horse, of ammonites, and of many insects, especially of those that dwell as "guests" with ants and termites, and have adapted themselves in many ways to their hosts. Upon comparing the scientific proofs for the

probability of the theory of evolution, we find that they grow the more numerous and weighty, the smaller the circle of forms under consideration, but become weaker and weaker, if we include a greater number of forms, such as are comprised in a class or in a sub-kingdom. There is, in fact, no evidence whatever for the common genetic descent of all plants and animals from a primitive organism. Hence, the greater number of botanists and zoologists regard a number of origins of evolution as much more acceptable than one. At present, however, it is impossible to decide how many independent genetic series must be assumed in the animal and vegetable knigdoms.

The atheistic theory of evolution is ineffectual to account for the first beginning of the cosmos or for the law of its evolution, since it acknowledges neither nor law giver. Natural science, moreover, has proved that spontaneous generation—i. e., the independent genesis of a living being from non-living matter—contradicts the facts of observation. The atheistic theory of evolution, rejects the assumption of a soul separate from matter, and thereby sinks into blank materialism."—from Catholic Encyclopedia.

A JEWISH VIEW OF EVOLUTION

"Evolution: The series of steps by which all existing beings have been developed by gradual modification. According to this hypothesis all animal and vegetable life may be traced to one very low form of life, a minute cell, itself possibly produced by inorganic matter. This development, according to Darwin, is due to the struggle for existence, and to the transmission through natural and sexual selection of those qualities which enable the possessors to carry on the struggle, in which only the fittest survive. The relation of the teachings of Judaism to this theory is not necessarily one of hostility and dissent. Evolution not only does not preclude creation, but necessarily implies it. Nor are purpose and design (teleology) eliminated from the process. Natural selection in strict construction is teleological. Mechanical design alone is precluded."

"The deevlopment of life from inorganic matter, the rise of consciousness from preceding unconscious life, the origin of mind, of conscience, are not accounted for by the theory of evolution, and as at the beginning of the chain, so at these links it fails. Jewish theism, while admitting that on the whole the theory throws light on the methods pursued in the gradual rise and unfolding of life, is justified in contending that it does not eliminate the divine element and plan and purpose from the process.

Evolution gives answer to the **how**, never to the **what**, and only inadequately to the **why**. Judaism, having never taught the doctrine of the Fall of Man, is not obliged to reject the evolutional theory on the ground that it conflicts with the dogma which demands the assumption of man's original perfection, and which thus inverts the process and sequence posited by the evolutionists." Jewish Encyclopedia, Funk and Wagnall, New York.

COMMENTARY

Note: It has not been thought best to make changes in the text as originally written.

Therefore explanations are here made in hope that further light may be cast upon turbid texts and obscure sentences.

Page 343. "The assumption will be made that the Creator must be endowed with any given attribute to create any discovered property of matter." The word possessed should be substituted for endowed. The word endowed implies the existence of an endower; but the word Creator is used everywhere in this book.

344. "Mind is the only entity alive." Only entity able to manifest as life. But the word life here used is conceived to have many aspects and phases in its long evolution from the lowest plant, lowest animal to highest man.

355. "A thought-form filled out to every limit with atoms." This seems to be highly metaphysical. But the attenuation of matter thought to be possible as revealed by researches in the astronomy of space, is indeed beyond the limits of human imagining. The quantity of matter now condensed into our solar-system, the sun, planets and satellites is known with a fair degree of accuracy and is 2 octillion tons. Also the distance—25 trillion miles—of the nearest neighboring sun to our own sun. Then when the 2 octillion tons of matter—quantity—was rarified and expanded out to the sphere whose radius equaled half the distance to the nearest sun, then the matter contained in 290,000 cubic miles, if condensed into one small mass, and weighed on the balance in a pharmacy, would weigh one grain. Now if thoughts are things, the question arises, are they rarer or denser than the matter thus expanded in cosmic space? One grain of matter reduced to atoms and dispersed to the limits of an ordinary room in a house, would be so rare that imagination would be surpassed.

355. "Blue-print" was inserted because there is no other term. For purposes of imagining, suppose that thought-form actually exist; then imagine that the thickness of the lines is equal to the one billionth of the thickness of a spider's thread. This species of imagining may lead to a clew to the nature of Mind.

365. This is perhaps not correct that one electron in darkness moving with the velocity of light, would emit light. Revolutions only around each other are the cause of light, heat and chemism. Thus revolving electrons moving as described in angles would form the impression of the diamond on the retinas. "One electron" should read: a number of revolving electrons, wherever this term appears.

373. "Both doctrines agree in one point, they exclude the necessity of the existence of a Creator." Only the ultra and radical evolutionists go this far; others do not allude to the subject. But Darwin used the words Creator and create; the words: "supposed Creation" appearing p. 83. The Origin of Species, Vol. II.

392. "Mind, therefore, is a flow of nascent electrons." Highly speculative; because none knows what Mind is. Delicate tests in the body and system of nerves, in circulation, digestion, breathing and other life-processes have been made with galvanometers. The sensitive needle has been seen to move, showing the action of weak currents of electricity. But really, none of these researches have given a clew to the nature of Mind. When I wrote the words quoted, I doubtless had been thinking of electrons actuating the unconceivably delicate filaments, extending from brain mentozoons. On a preceding page I have substituted the term Natural Direction for Natural Selection. Directivity here takes the place of selectivity. Electrons were created, and then directed. From the very nature of thought and speech, it is impossible that any entity can be created save substance. Matter, and its 89 at present known manifestations or phases; and the illimitable number of objects visible and invisible into which it is now divided, were all formed. Electrons, atoms, molecules, particles and granules, did not select, they did not direct, but were directed, and by Mind. On all sides, the term "Natural Selection" is being enclosed within contracting limits; and the contracting must obtain until the theory is reduced to a microscopic vanishing point. Then literature will be free from this nineteenth century delusion. For "chemical affinity" is not activity, nor selectivity, but it is Directivity. If not, then the Sidereal Universe and its inhabitants, the organic creatures, would not now be in existence.

"The evidences in reference to the evolution of the human body are so compelling as to be already generally accepted, and we have now the question of evolution of mentality to deal with. The progressive intelligence of animals is shown to depend upon the structure of the brain and nervous system; and there exists such a finely graded series in this respect that there is strong evidence of the derivation of human facilities from brute facilities." Wm. A. Locy, N. W. University.

I would change this quotation to:—The derivation of human and animal faculties from Original-Mind—the Creative-Mind. Thus calculus, and quaternions, formulas for computing eclipses, weighing distant suns, and computing the inertia of an electron—derived from "brute faculties"? No! Mathematics was derived from the mighty mathematical Mind that created electrons and formed Nature. The expression creative Mind is redundant and is equal to the terms hot fire, cold ice. The Mind cannot do aught but create. That is its Nature. The most difficult of all acts of Mind is to express itself in matter. Even the Master Mind, the actual Creator, finds this desire to be of the most extreme difficulty, it is excessively complex. The formation of a crystal is easy in comparison. Diamond is the highest form of matter; but to form this from carbon is a slight work in comparison to the formation of oxygen, carbon, hydrogen, and nitrogen into an organism, a chronozoon in the brain able to express, or manifest one thought. All works of the Creator, the formation of a hundred million suns, and the Galactic band in space, are trivial in comparison to that of forming a mentozoon in a brain. This is the highest act of the Creator, within range of human scrutiny and exploration. Inconceivable numbers of series of trials and errors, abortive attempts, and failures, from the appearance of life and Mind units far more minute than are the Amœba, to the highest human were made before the heights were reached. And Mind cannot possibly proceed in any other way.

CREATION

The Mighty Mind that formed the stellar Universe, congeries of suns, billions of worlds, flying comets, dashing meteors and auroral splendors; that created light and the supernal colors of the solar spectrum, the glories of sounds, tuneful strains, and harmonics, the flowers, leaves, singing birds, the tiny humming birds, buzzing along with bees by my windows, here in a wilderness of wild flowers of the mountains, as I write; all these wonders, and the sea, the sea, visible from another window, with expanse of clouds, now blazing in sunset glow, these and an infinity of wonders in telescope and microscope, and more, so many that there could not be books enough in the world to mention them, the Majestic Mind found all these trivial works, and insignificant when mentioned in the same series—with the work of causing Mind to manifest in any kind, or phase of matter. The acme of creation is to conjoin Mind to matter. Thus the earth passed ages and eons of preparation for the purpose and plan of expressing Mind in living tissues.

Mind alone is eternal; and thoughts immortal. And it is impossible not to be so in the very nature of the problem. Thus let the entire sideral structure, all suns and worlds, and the billions of different objects that these worlds contain form the simplest to the most complex, all disintegrate back into dissociated electrons, as is the case with radium now; then the whole could be produced anew from original thought-forms. Designs, models, patterns, do not fade from Primordial Mind. For Mind itself consists of these designs, thought-plans, outlines, forms, mentoids, phrenoids, and types.

Let stellar structures come and go in ever recurring series, then Mind preceding all these mutations is the Eternal. Whatever the design that can be re-produced, over and over again upon the same plan, during eternal eons, however complex, this is certain, it is reformed by Mind.

Several times while writing this book, it has seemed to me that I was on the verge of discovering a clue to the real nature of Mind; the knowledge appeared to be coming nearer and nearer, and then just within my reach, ready to be grasped, only to be lost. Like the illusory tissues of imagination, they have dissolved. Many series of imaginings have thus appeared and vanished.

There has been from lowest to highest on this planet, the astronomic home of man one perpetual evolution or mutation, it matters not, in Mind, always and without exception in Mind first and body last. This is the rigid, set and fixed law of Nature, of mentonomy, the law of the Mind. This book started out to find a clue to the real nature of Mind. Not a trace of even one clue has been discovered.

The End.

Note.—Pages in this book are continued from page 335, the last in the book Radiant Energy.

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